

The Agricultural System Ancient Olive Trees Territorio Sénia



MANCOMUNITAT
TAULA del SÈNIA

Mancomunidad Taula del Sénia
Sant Miquel Square, 3
12300 Morella
Local Institutions Register num. 0543014
NIF. P4300069D



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I. SUMMARY INFORMATION



I. SUMMARY INFORMATION

I.1. Name of the Agricultural Heritage System

Ancient olive trees *Territorio Sénia*

I.2. Requesting organization

Mancomunidad Taula del Sénia. Consisting of a local entity at supra-regional level (public administration) formed by 27 municipalities (15 from the Valencian Community, 9 from Catalonia and 3 from Aragon).

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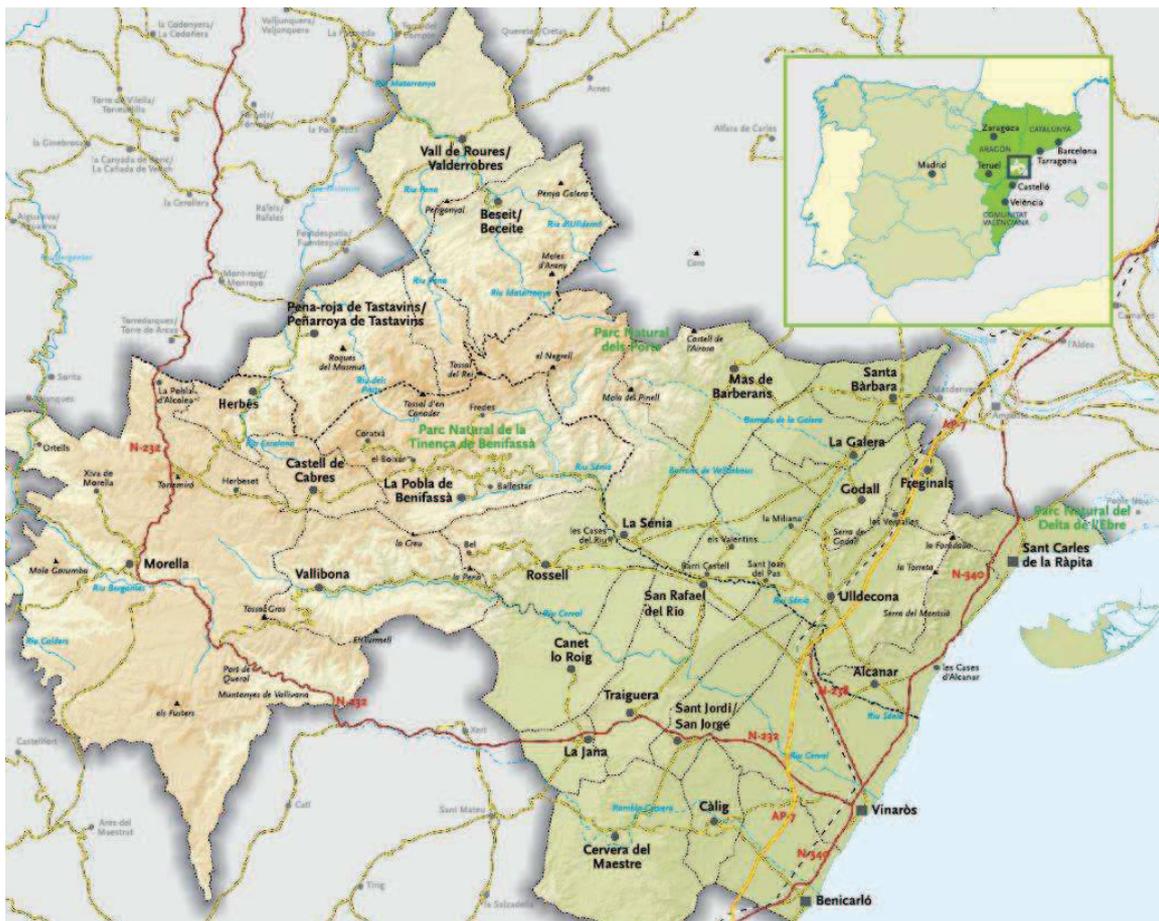
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I.3. Responsible ministry of the Government

Ministry of Agriculture and Fisheries, Food and Environment. The Government of Spain.

I.4. Location of the site

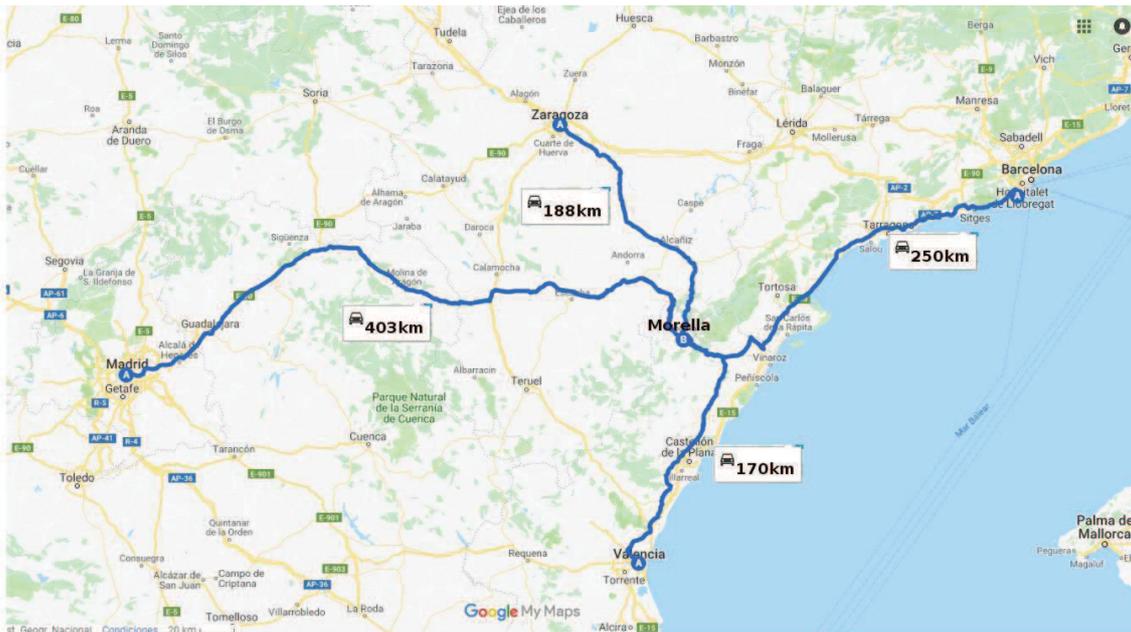


This is the map of the whole Territorio Sénia, which is formed of 27 municipalities (15 from the Valencian Community, 9 from Catalonia and 3 from Aragon) and overcomes 207.000 hectares.

I.5. Accessibility of the site from the Capital Cities or Major Cities

The *Territorio Sénia* is located at the meeting point between the three ancient kingdoms of the Crown of Aragon which are the current autonomous communities: Aragon, Catalonia and Valencian Community. Despite their differences, their municipalities are linked by their geography, their history, their language and their culture. It has been confirmed that this territory owns the highest concentration of ancient olive trees from around the world.

The distances from their capitals are relevant as range from 140 to 190 Km. Although railways and the motorway AP-7 pass through the area, communications are poor and expensive.



Distances from Morella to regional and national capitals

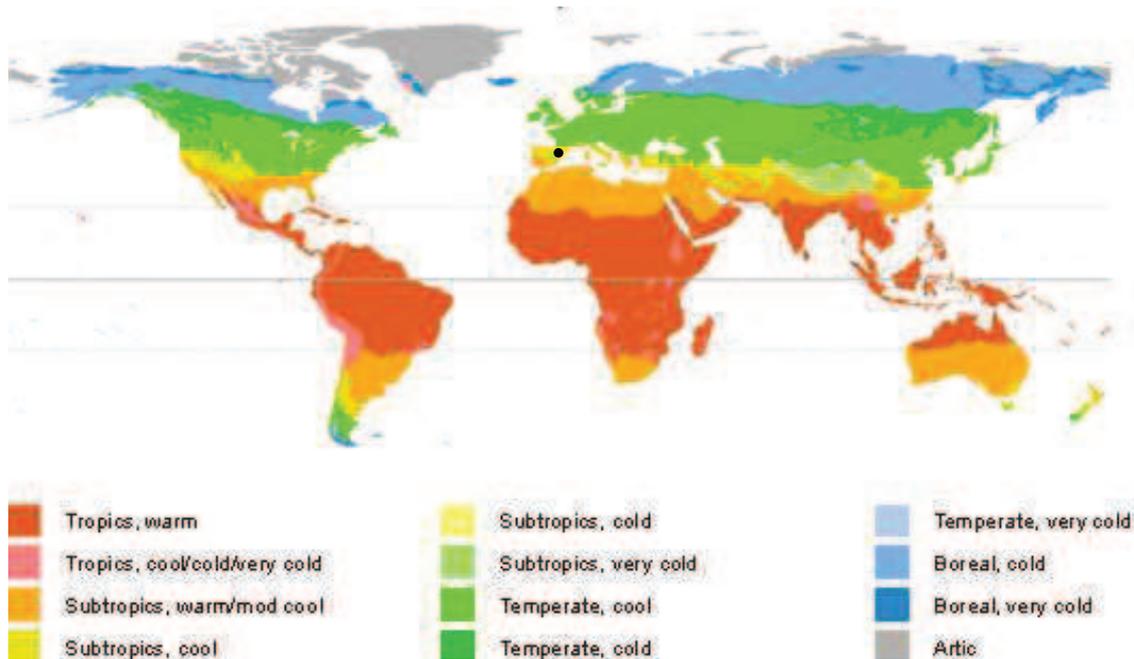
I.6. Area of coverage

The *Territorio Sénia* is formed by 27 municipalities (15 from Valencian Community, 9 from Catalonia and 3 from Aragon) with an extension of 207.000 hectares. Their relationship is included in the section I.10.

I.7. Zona agro-ecológica

The Food and Agriculture Organisation of the United Nations (FAO) and the International Institute for Applied Systems Analysis (IIASA) have developed the Agro-ecological zones methodology.

In the following map, the Agricultural System Ancient Olive Trees Territorio Sénia is located within the area Subtropics, warm/mod cool.



Source: FAO

II.8. Topographic features

Within the *Territorio Sénia*, three differentiated areas exist: mountains, intermediate plains and coastline.

Mountains: abrupt landscapes with large slopes and heights that easily overcome the 1.000 meters. For example, the *Tossal d'En Canader* (1.393 meters), which is the highest point, and the municipality of *Castell de Cabres* (1.134 metres). Five Valencian municipalities are totally included in this area while other six partially (3 from Aragon, 2 from Catalonia and 1 from Valencian Community). All together (11) form only the 12% of the population but inhabit the 61% of the territory.

Intermediate plains: they are set in the foothills of the massif of *Els Ports* and are formed by both large plains and medium-altitude mountain ranges. This area includes the highest concentration of olive groves and the landscape known as “the sea of olive trees”. Seven Valencian municipalities and five Catalan ones are included in this area and represent the 17% of the population and the 27% of the territory.

Coastline: it includes all the coastline, with minimum heights above sea level and few low-altitude mountain ranges. It is formed by 2 Valencian and 2 Catalan municipalities, which represents the 71% of the population in only the 12% of the territory.

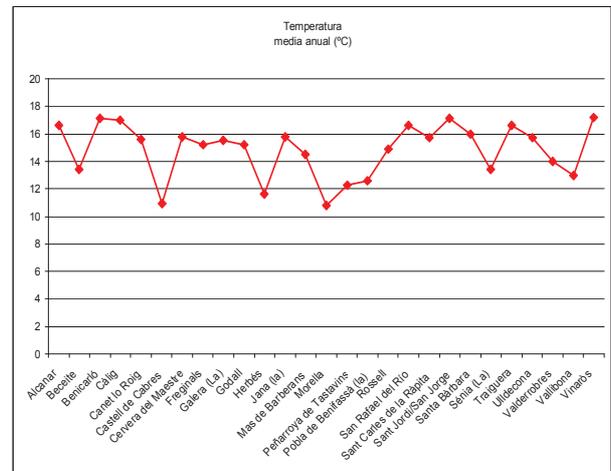
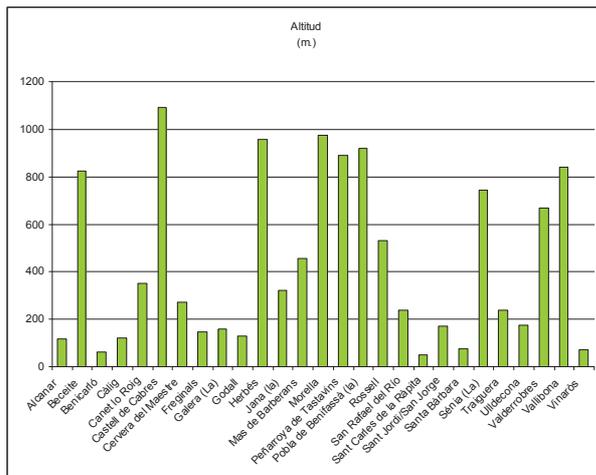
I.9. Climate type

Despite the sensitive differences between the three areas, in general it is a Mediterranean climate with very strong contrast effects: cold and snow in the interior areas, some high winds, intense heat in summer, etc. Annual rainfall varies between 300 mm in the driest years and 600/700 mm in the wettest ones. However, there are many differences within the territory as it rains more in mountain areas than in other ones generally.

Climate type within the *Territori Sènia*

Municipality	Height (m.)	Annual rainfall (mm)	Average temperature Lowest temperature – coldest month (°C)	Average annual temperature (°C)	Average temperature Highest temperature – hottest month(°C)	Length of cold period or frosts (number of months)	Length of dry period (number of months)
<i>Alcanar</i>	116	568	5,1	16,6	31,50	3	3
<i>Beceite</i>	822	648	0,8	13,4	29,80	6	2
<i>Benicarló</i>	62	570	5,4	17,1	30,50	3	3
<i>Càlig</i>	121	555	5,4	17	30,60	3	3
<i>Canet lo Roig</i>	353	699	4,3	15,6	30,60	4	3
<i>Castell de Cabres</i>	1.093	612	-0,3	10,9	27,00	7	2
<i>Cervera del Maestre</i>	272	604	4,5	15,8	29,80	4	3
<i>Freginals</i>	147	576	3,7	15,2	30,10	4	3
<i>Galera (La)</i>	158	675	3,7	15,5	31,00	4	3
<i>Godall</i>	128	617	3,6	15,2	30,60	4	3
<i>Herbès</i>	956	561	-0,3	11,6	28,10	7	2
<i>Jana (la)</i>	323	663	4,4	15,8	30,10	4	3
<i>Mas de Barberans</i>	454	760	2,7	14,5	30,30	5	2
<i>Morella</i>	976	610	0	10,8	27,20	7	2
<i>Peñarroya de Tastavins</i>	890	582	0,1	12,3	29,00	7	2
<i>Pobla de Benifassà (la)</i>	920	703	2,1	12,6	28,80	6	2
<i>Rossell</i>	531	738	4	14,9	30,40	5	3
<i>San Rafael del Río</i>	238	624	5,1	16,6	31,20	3	3
<i>Sant Carles de la Ràpita</i>	50	537	4,2	15,7	30,80	3	3
<i>Sant Jordi/San Jorge</i>	173	577	5,6	17,1	31,10	3	3
<i>Santa Bàrbara</i>	77	641	4,1	16	31,10	3	3
<i>Sènia (La)</i>	743	706	2,1	13,4	29,20	6	2
<i>Traiguera</i>	240	616	5,2	16,6	31,00	3	3
<i>Ulldecona</i>	174	615	4,2	15,7	30,80	4	3
<i>Valderrobres</i>	671	557	1	14	31,20	6	2
<i>Vallibona</i>	839	751	2,5	13	28,90	6	2
<i>Vinaròs</i>	73	555	5,5	17,2	31,00	3	3

Source: Ministry of Agriculture



I.10. Estimated population beneficiary

The population of the 27 municipalities of the *Territorio Sénia* is 111.021 inhabitants so they would be the principal beneficiaries of the recognition of the system.

MUNICIPALITY	Inhabitants	Surface (ha)
<i>Alcanar</i>	9.393	4.710
<i>Beceite</i>	551	9.672
<i>Benicarló</i>	26.429	4.786
<i>Càlig</i>	1.959	2.747
<i>Canet lo Roig</i>	706	6.867
<i>Castell de Cabres</i>	17	3.072
<i>Cervera del Maestre</i>	620	9.324
<i>Freginals</i>	397	1.738
<i>Galera, La</i>	719	2.742
<i>Godall</i>	608	3.394
<i>Herbés</i>	48	2.710
<i>Jana, La</i>	684	1.950
<i>Mas de Barberans</i>	584	7.930
<i>Morella</i>	2.441	41.354
<i>Peñarroya deTastavins</i>	461	8.328
<i>Pobla de Benifassà, La</i>	203	13.600
<i>Rossell</i>	987	7.493
<i>San Rafael del Río</i>	464	2.110
<i>Sant Carles de la Ràpita</i>	14.902	5.323
<i>Sant Jordi/San Jorge</i>	937	3.667
<i>Santa Bàrbara</i>	3.797	2.835
<i>Sénia, La</i>	5.652	10.863
<i>Traiguera</i>	1.434	5.976
<i>Ulldecona</i>	6.321	12.681
<i>Valderrobres</i>	2.338	12.404
<i>Vallibona</i>	77	9.137
<i>Vinaròs</i>	28.292	9.546
TOTAL	111.021	206.959

I.11. Indigenous population/Etnia

Not applicable.

I.12. Main source of livelihoods

Agriculture 13%, Construction 11%, Industry 11% and Services 65%.

I.13. Executive summary

The *Territorio Sénia* is located at the meeting point between the Valencian Community, Catalonia and Aragon and, therefore, it is far from the capitals and the centres of power. This territory includes 27 municipalities (111.000 inhabitants in 2.070 km²) which are linked by their geography, their history, their language and their culture and also have the highest concentration of ancient olive trees from around the world.

Twelve years ago, working together the *Mancomunidad Taula del Sénia* (local public entity at supra-regional level) and the *Asociación Territorio Sénia* (formed as 50% by the Mancomunidad and as 50% by private sectors) and in cooperation with many institutions, some projects on rural development (rural paths and others), employment (studies and projects, employment workshops, experimental programs,...), tourism and heritage among others have been develop. These projects have helped to improve the inhabitants' living conditions.

The existence of 5.000 ancient olive trees is what turns this territory into an unique area in the world, with a lot of possibilities to exploit: recovery of abandoned ancient olive trees and to put them into production, a bigger cooperation between economic sectors, olive oils, oleotourism,...

Ancient olive trees

However, in response to concerns about the plunder of some specimens of ancient olive trees, an inventory was made. Initially in 2008, this inventory included 4.080 ancient olive trees with at least 3.5 metres of perimeter at 1.3 metres from the ground. From this, some projects focused on the preservation and the put on value of these trees and some results have already been achieved. The limit to include a tree in the inventory was that the trunk length had to measure at least 3.50 metres of perimeter at 1.30 metres from the ground following the criteria used in the study "Prospecting of the monumental olive trees in Andalucía" carried out by Concepción Muñoz-Díez, Diego Barranco and Luís Rallo which were published in the book "The olive heritage".

More than the 96% of the ancient olive trees in *Territorio Sénia* are of the variety *Farga*, which is the oldest one. Their trees are vigorous and have large trunks and treetops. Their oil has a great quality even though its limited productivity and, additionally, its positive qualities last for two years due to its polyphenols. The ancient olive trees included in the inventory are those which has at least 3.50 meters of perimeter of trunk at 1.30 metres from the ground. Therefore, there are 4.960 specimens spread among the municipalities but the 80% can be found in *Ulldecona* (Catalonia) and *Canet lo Roig*, *La Jana* and *Traiguera* (Valencian Community). Moreover, there are some specimens in other nearby municipalities of the *Territorio Sénia*.

Outside the *Territorio Sénia*, not only in the rest of their autonomous communities (Aragon, Catalonia and Valencian Community) but also in the rest of Spain (Andalusia and other regions), it is possible to find some specimens of monumental olive trees, but they are individual cases and the varieties are very different. (In the study cited above, only 35 ancient olive trees were found in the whole region of Andalusia, even though it was an exploration). Many countries in the South of Europe (Greece, Italy, France and Portugal) have been visited, and only few isolated specimens of monumental trees can be found there, in spite of Italy, where many specimens can be found in the South of the country.

With regards to the protection of the ancient olive trees, the Law of Monumental Tree Heritage of the Valencian Community was adopted by the Valencian Parliament unanimously in 2006. This law protects all the trees (not only olive trees) with at least 6 meters of perimeter of trunk at 1.3 metres from the ground. Therefore, the law is not enough to protect the olive trees as among the 3.100 ancient olive trees included in the inventory in the Valencian area, only the 5% of them has more than 6 meters of perimeter, being the rest excluded from any protection. From this, efforts are also being made to extend the law through Regulation in order to protect all olive trees with at least 3.5 metres of perimeter and follow the law enforcement to provide financial support in order to put the olive oil from the ancient olive trees on value. In contrast, in

Catalonia and Aragon only few specimens are individually protected. Consequently, much work needs to be done to protect these olive trees and put their oils on value.

Olive trees of traditional varieties

It has been calculated that the total number of olive trees in the area is 2.400.000 and that the principal and native varieties are *Morruda*, *Farga* and *Sevillenca* in Catalonia and Valencian Community and *Empeltre* in Aragon. However, it has to be taken into account that between the 10 and 50% of these olive groves are not in agricultural production.

Average annual output is estimated at 12.200.000 kg of olive oil, varying from year to year. Regarding the quality, the sum of extra virgin and virgin oil can be up to a 30%, even though some years it has been only the 12%. Most of the quality oil is a non-controlled coupage from traditional varieties but, nowadays, other single variety oils have started to be produced and have been well received by the market.

Other crops and productions

Among the 207.000 hectares of the *Territorio Sénia*, a total sum of 34.189 hectares are covered with olive groves, which means the 16.5% of the total surface and the principal growing within the area (47%).

There are many different types of land uses within the *Territorio Sénia*. A large part of this territory (60%) is covered by conifers, leafies, scrub and grassland, specially in the inland mountain areas. Moreover, the 36% of the territory is covered by crops and the other 4% are unproductive areas or water bodies. Regarding crops, the most important are rainfed crops as they represent the 75%. The olive grove is the principal growing (the 99% are rainfed crops) which represents nearly half of cultivated soil. Rainfed fruit trees and irrigated citrus fruits are next in importance..

This diversity of land uses together with the coexistence of agriculture, livestock, forestry and fishing in the same space make the *Territorio Sénia* an area with a great agro-ecological value that creates interesting opportunities to stimulate local trade with quality goods that protect environment as well.

The olive growing cultivation system as part of holistic system

Both agricultural and livestock activity in *Territorio Sénia* maintain a balance and are closely related. Olive groves need other activities from the primary sector at the same time it favours them. Likewise, pig and poultry farms as well as cattle and sheep sector in the territory supply organic fertilizers to olive groves. Then, the olive trees produce their fruits: the olives are transported to oil mills in order to produce olive oil, which creates subproducts that are difficult to process, both economically and environmentally. Therefore, some of these subproducts are reused.

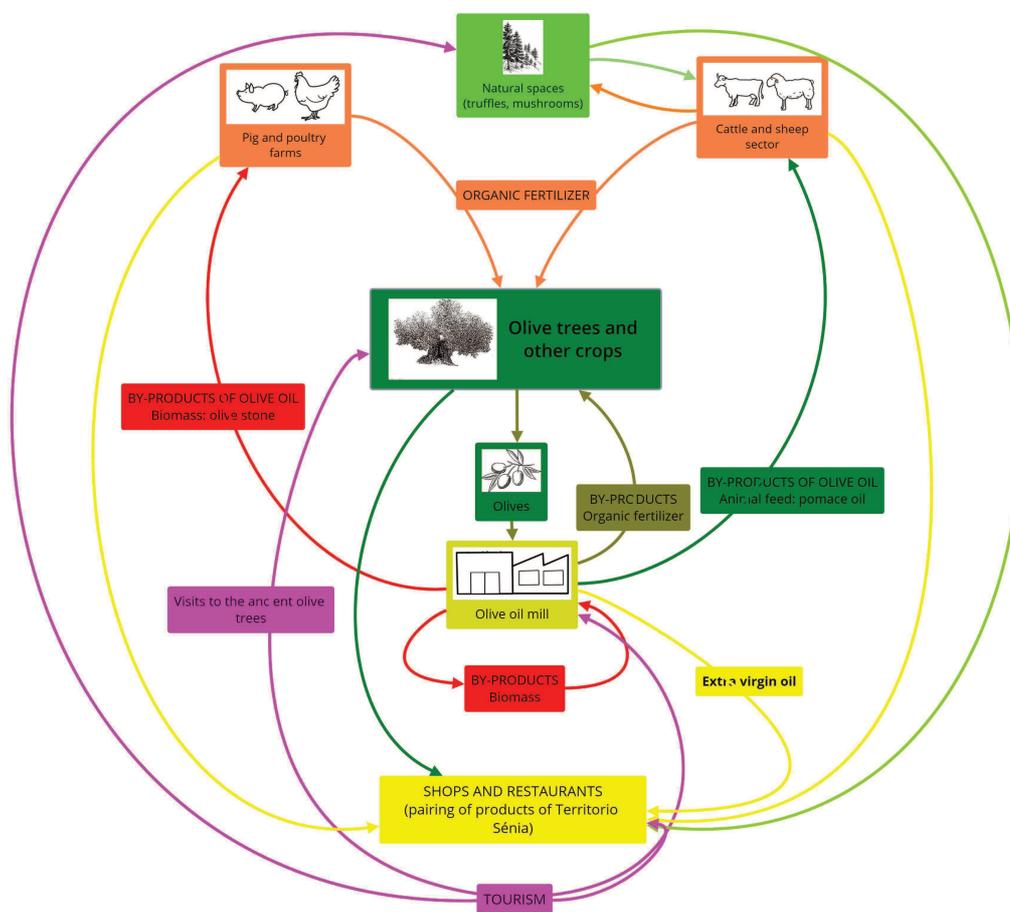
The following graph explains the existent interrelation between the sector of the traditional rainfed olive growing (the main crop within the *Territorio Sénia*; it represents the 50%) and other products of the primary sector (fruit trees, citrus fruits, artichokes, livestock, fishmeal and seafood, etc.) through the fusion with star products (truffle and mushrooms) or natural spaces. In the gastronomy of the area it can be usually found both traditional and refined recipes, which has increased recently. Therefore, there are many sophisticated recipes: combinations of olive oil with truffles, seafood, cheese, charcuterie, artichokes, citrus fruits,... Some food preservation techniques with olive oil in packaged and fried products are used.

It is also highlighted the existent relation between waste and subproducts in different activities within the primary sector. Likewise, organic fertilisers, from both extensive (cattle and sheep) and intensive (poultry and pig) livestock, are used in the crops in the area, specially the rainfed ones: olive crops, fruit trees, etc. At the same time, the subproducts of the olive oil production are used as biomass for heating, organic fertilisers for agriculture or food suplement for extensive livestock.

Moreover, tertiary sector (tourism, trade,...) is also related to olive growing and other productive sectors. Since some agreements were signed, visits to the ancient olive trees have been organised in private properties (natural museums and areas). Therefore, undesirable visitors or damage to crops and their environment are avoided. There are operational oil mills that can be visited as well as some historic ones that have been recovered and explain the history and the uses of the olive growing in the *Territorio Sénia*. For example, there is a guided route through the ancient Roman Via Augusta, the natural museum of ancient olive trees called El Arión, an oil mill and, finally, a restaurant with 1 Michelin Star, where the menu of the olive oils can be tasted. Furthermore, during the tour, some of the olive oils can be bought.

All in all, and looking at the graph below, it can be concluded that the whole Agricultural System Ancient Olive Trees Territorio Sénia is a sustainable system, both at an economic and environmental level.

Interrelation between different activities and economic sectors



II. DESCRIPTION OF THE AGRICULTURAL HERITAGE SYSTEM



Significance of the GIAHS

- For being based on cultivation of olive groves of regional varieties
- For being a singular and unique heritage in the world
- For their results in preservation and the put on value of the ancient olive trees and their oil
- For its importance in global challenges
- For its importance for biocultural diversity
- For being a good example of public-private cooperation
- For the awards and recognitions won: national and international



II. DESCRIPTION OF THE AGRICULTURAL HERITAGE SYSTEM

II.1. Significance of the Proposed GIAHS Ancient Olive Trees *Territorio Sénia*

II.1.0. For being based on cultivation of olive groves of regional varieties through traditional systems and methods: rainfed, non-intensive, etc.

There are 33.520 hectares of rainfed olive groves in the area while there are only 275 hectares of irrigated ones (significantly fewer than the 1%). Moreover, there are also 386 hectares of rainfed olive grove associated with conifers. The second major crop in the area is the rainfed fruit crop with 14.230 hectares, while the irrigated one only has 349 hectares (the 2,5%). Other rainfed crops cover 7.312 hectares, so the total surface with rainfed crops represent the 75% of the *Territorio Sénia*.

The third crop in the area is the irrigated citrus fruit crop with 13.350 hectares that together with vegetables or other forced cultivation, rice and others can reach the 25% of the total area under cultivation.

Regarding the varieties of olives in the area, the predominant ones are “*Farga*”, “*Morruda*”, “*Sevillenca*” and “*Empeltre*”. All of them are traditional, appropriate for rainfed crops and deeply rooted in the area. The first three varieties are very hard to find in other regions outside the three provincial councils. Therefore, due to the positive characteristics of their olive oils, it is important to protect these varieties together with the ancient olive trees to develop projects in the future.

With regards to the density of olive trees in the properties within the *Territorio Sénia*, it can generally be included in the traditional rainfed exploitation model, even though it has some differences. While the traditional rainfed model has an average density of 90 or 100 olive trees per hectare, the model in the *Territorio Sénia* ranges between 50 and 70 olive trees per hectare due to low rainfall. Another important difference is that there is nearly always one foot per olive tree, while in other traditional rainfed areas there are two or three feet per olive tree. Moreover, in the properties with ancient olive trees there is no existence of a regular plantation framework.

All in all, all data above clearly suggest that all efforts made to conserve and to put on value the ancient olive trees and their environment are focused on climate change, water shortage and energy conservation as well.

Comparison of average industrial output within the *Territorio Sénia*:

Hectares of olive groves	34.189 ha.
V.E. <i>Farga milenario</i> Olive oil	6.712 litros
Extra Virgin Olive oil	817.048 litros
Virgin Olive oil	1.815.619 litros
<i>Lampante</i> Olive oil	9.339.639 litros
Total of olive oil	11.972.306 litros

II.1.1. For being a singular and unique heritage in the world

The olive tree, *Olea europaea L. subspecies europea*, belongs to the *Oleaceae* family which embraces more than 600 different species, distributed in twenty genres approximately. The olive tree is the only species in this family whose fruit is edible and can be cultivated as well. The wild olive tree, *Olea europaea L. subspecies sylvestris*, is the sibling of the olive tree and is considered to be the ancestor of the current olive groves, which appeared by genetic selection of this ancestor.

It is thought that the origin of the olive growing began 6.000 years ago in the Eastern Mediterranean due to the vegetative propagation of the best specimens for human consumption. Once the cultivation was successful, it rapidly spread through all Mediterranean lands. It seems to be the Phoenicians who brought it to the Iberian Peninsula, but it was extended during the Roman Empire. The majority of the ancient olive trees in the territory are of the variety “*Farga*”, which is one of the oldest. Likewise, some specimens with the same DNA were found in the South of France and Italy.

The olive tree has been present in all historical cultures in the Mediterranean, but it has also been linked to the majority of religions. Moreover, it has been highlighted not only in written literature but also in popular wisdom. It is also a symbol used in both sports and peace. Apart from its spread to America 5 centuries ago, it is being spread to other countries and continents recently, such as China or Australia.

The olive oil is the product obtained from the olive fruits: the olives. Apart from its great nutritive properties, studies have demonstrated its healthy values and it is also one of the pillars of the Mediterranean diet.

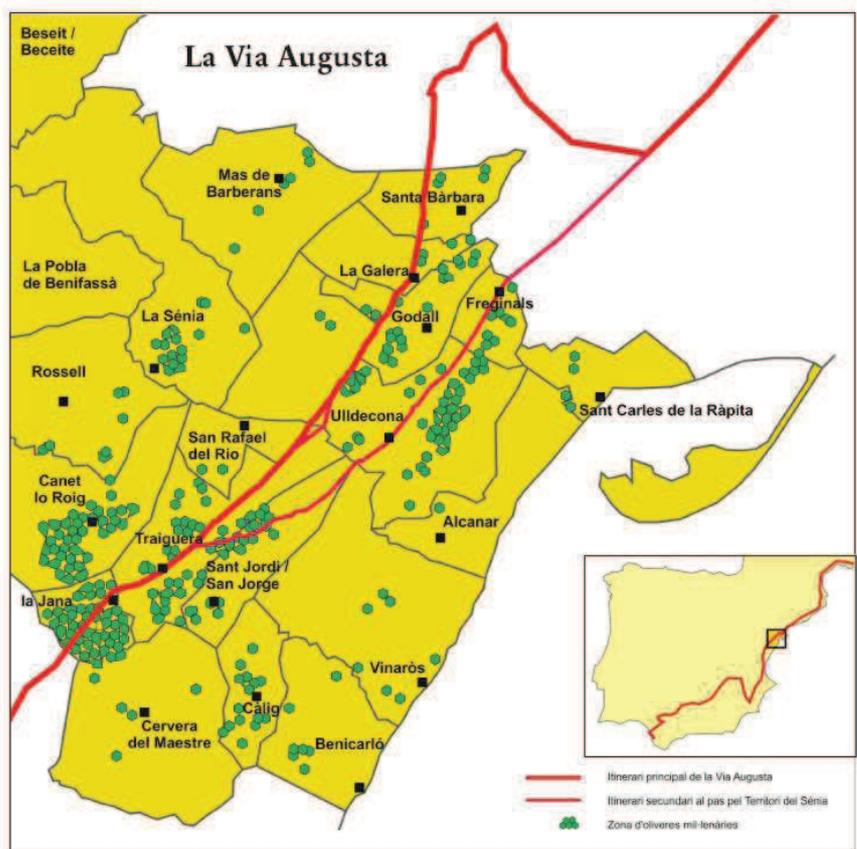
In addition to the variety *Farga*, which is the oldest and the one with a high quality fruit, there are other main varieties within the area: *Morruda*, *Sevillenca*, *Empeltre* and other local ones that can be found in traditional and rainfed crops. The ancient olive trees share its vital space with other olive trees of the variety *Farga* (but with a smaller size) or other varieties in the area. There are plenty of margins and other dry stone buildings (huts or refuges) as well as very singular flora and fauna, which are adapted to the environment. Regarding their olive oils, they have their own differentiated characteristics, so their product is excellent and is increasingly appreciated in markets.

Therefore, the value and the significance of the whole project are evident: ancient or monumental olive trees, olives from traditional varieties, their environment, habitat, fruits, and certified oils for both its origin and maximum quality in their wide range and their products, which are in cooperation with restaurants, food shops, museums, routes and tourism.

The area is known as *Territorio Sénia* (due to the river with the same name, which is the limit between Catalonia and Valencian Community) and is formed by 27 municipalities (15 from the Valencian Community, 9 from Catalonia and 3 from Aragon) which are located in the meeting point of the 3 old reigns of the Crown of Aragon. However, the highest concentration of ancient olive trees is set in the intermediate plains (at a height above the sea between 150 and 350 meters) and next to the old Roman *Via Augusta*.

Some old or monumental specimens can be found in many places of Spain, Italy, Greece and other Mediterranean countries, but in this area is located the highest

concentration of monumental olive trees from around the world: 4.960 olive trees with at least 3.5 meters of perimeter at 1.3 meters from the ground (reference measurement used in the prospecting carried out in *Andalucía* in 2006, in which only 35 specimens were found). After some aids were obtained, the Polytechnic University of Madrid performed the dating of 8 specimens (which can be visited) and results showed that these olive trees are from 1.704 to 1.000 years old. Therefore, it was confirmed that some of these trees already existed during Roman times. Although in the South of Italy there are more monumental olive trees than in *Andalucía*, these quantity is not comparable to the high concentration that exist within the *Territorio Sénia*. Like temples, monuments and archaeological remains, the ancient olive trees are part of the historic and cultural heritage of many villages, but they also have an added value as they are living beings and currently in production.



Map showing the path of the old Roman *Via Augusta* romana and the location of the ancient olive trees

More than 96% of the ancient olive trees in the Territorio Sénia are of the variety Farga, which is the oldest and largest, so it has greater costs associated with cultivation. From this and due to its irregular production and the fact that people preferred quantity to quality, this variety was replaced by the varieties Morruda and Sevilença two or three centuries ago. These three varieties form the 3 Designations of Origin (D.O.) Baix Ebre – Montsià. However, the variety Empeltre predominates in the three municipalities of Aragon. Although there are other lesser varieties, all the olive groves in the Territorio Sénia are formed mainly by olive trees from these 4 traditional varieties which, together with their environment of dry stone buildings, flora and fauna, create the landscape known as “the sea of olive trees”.

Therefore, all the 4.960 ancient or monumental olive trees in the *Territorio Sénia*, with at least 3.5 meters of perimeter of trunk at 1.3 meters from the ground, constitute the

basis of the Agricultural Heritage System Ancient Olive Trees *Territorio Sénia*. Apart from being an agricultural heritage, this system is part of the historic, cultural, environmental and sustainable heritage as well, which is unique in the world.

II.1.2. For their results in preservation and the put on value of the ancient olive trees and their oil

Awareness. The ancient olive trees were planted since time immemorial and have produced its fruit (the olive oil) throughout its entire lifetime. However, in the last century these ancient trees began to be cut down (in order to increase the oil production with smaller olive trees or to replace them with irrigated crops: citrus fruits or vegetables) and were chopped for timber or the wood handmade manufacture.

Additionally, at the end of the last century, due to the real estate boom, some of the most monumental olive trees were cut down entirely and moved to other places in order to be replanted for ornamental purposes. Probably, people from the territory were made aware as large vehicles loaded with the best olive trees were seen. Moreover, publications of cultural associations of the area helped raise awareness.



Acknowledgement to the ancient olive trees owners.

Inventory of the ancient olive trees in the *Territorio Sénia*. After the realization of some inventories of ancient olive trees at a regional level, the Government of *Andalucía* and the University of *Córdoba* made a study of "Prospecting and cataloguing the singular olive trees in *Andalucía* (2006). The study was only an exploration and the number of olive trees found was low (35 olive trees and 56 olive groves). However, this study was useful to establish the criteria of singularity, which are practically the same that we used in our Inventory of the ancient olive trees in the *Territorio Sénia* (it includes the specimens with at least 3.5 meters of perimeter of trunk at 1.3 meters from the ground. In the years 2008-2009, the *Mancomunidad Taula del Sénia* made this inventory, which was directed by the biologist *Romà Senar* in cooperation with many people and institutions: SOC (Government of Catalonia), Employment Workshop (Ministry of Labour), councils, municipal technicians, owners and oil mills. Then, a total of 4.080 ancient olive trees exceed the reference measurement, which were completely described (different measurements, variety, georeference, photographs). Since then, the inventory is updated every year by the *Mancomunidad* and nowadays (in 2017) the total sum of ancient olive trees is 4.960, which are concentrated in the area of intermediate plains.

Previously, in 2006, the Government of the Valencian Community adopted a Law on protection of tree heritage. All the trees with more than 6 meters of perimeter of trunk at 1.3 meters from the ground are included in this law. Nowadays, the Regulation has been published and the protection of olive trees has been extended to those that overcome the 3.5 metres of perimeter of trunk at 1.3 metres from the ground (the same figure we used in our inventory). However, in Catalonia (2) and Aragon (0), there are only some individual protections. But a Proposal for Protection Law has been presented in Catalonia in order to protect monumental olive trees, which needs to be debated in the Parliament. In the South of Italy (in *Puglia* Region), the ancient olive trees are protected by another law. This law includes different measurements of the trees (at least 1 meter of perimeter at 1.30 meters from the ground). Therefore, all cases it is evident that the results of the protection laws are difficult to evaluate as there is no regulation and compensatory measurements.



Ancient olive trees located in the *Via Augusta* in *Traiguera*

Funding from the Ministry and the autonomous communities. Thanks to funding, a joint work was started to preserve and put on value not only the ancient olive trees and their oil but also olive oil from traditional varieties. Moreover, there were established relations between restaurants and tourism. After ten years of continuous work, it can be confirmed that the System is already in progress and it is achieving its goals, with the following results.

Awareness of the owners, as well as people in the territory. Instead of selling the ancient olive trees to get more money, the owners have been made aware of the fact that producing a high quality oil they obtain more benefits while enjoy a unique heritage that could transmit to their successors someday. Moreover, some of the abandoned olive trees have returned to be put in production.

Improvement of the production process: olives and their oil. Generally, people preferred quantity to quality. Nowadays, thanks to the advice from the best experts on the production processes, collection and transport of the olives, production, storage and conservation of the oil, the oil quality have improved a lot in the area.

Increase of the certified oil from ancient olive trees. From 2009 to 2017, there has been an increase of 1 to 10 oil mills and 300 to 6.712 litres of this olive oil. All process is certified by a renowned company and the official analysis in tasting panels. Among the 10 oil mills, 4 are from Catalonia and 6 from Valencian Community (6 cooperatives and 4 private oil mills). Totally, 12 brands are included within the Guarantee Mark *Aceite Farga Milenaria*. According to the official tasting panel: “this olive oil is golden-green, with fruity aromas of high-medium intensity which reminds the freshly cut grass; the taste has a balance of piquancy and sweet, with a mild touch of bitter and very low astringency.”

Increase in the olive oil production of traditional varieties. More than 96% of the ancient olive trees are of the variety *Farga*. There are also predominant varieties such as *Morruda* and *Sevillenca*. These three varieties form the 3 Designations of Origin (D.O.) *Baix Ebre – Montsià*. However, the variety *Empeltre* predominates in Aragon. There are also other local varieties, like *Cuquello* and *Marfil*. All these varieties produce extra virgin olive oil (usually coupage), but there are also single-variety olive oil, which are appreciated in market for their singular characteristics. The aim is to obtain a controlled coupage (*Via Augusta* olive oil) from these olive oils, which will define the *Territorio Sénia*.

Cooperation agreements with the best restaurants in the area. Each restaurant elaborated their own receipts with olive oils from the ancient olive trees in the *Territorio Sénia* in exchange for consuming it. These receipts were included in the restaurant menus and two books were published. Moreover, campaigns are carried out in food and specialised stores, both inside and outside the area.



3 restaurantes con Estrella Michelin promocionando el aceite de olivos milenarios

Oleotourism: museums, areas and paths of ancient olive trees. Thanks to agreements signed with owners, oil mills and councils, the area owns two natural museums of ancient olive trees: *El Arión* (in *Ulldecona, Tarragona*) and *Pou del Mas* (in *La Jana, Castellón*). These museums are set in the area of the highest concentration of ancient olive trees. Moreover, 12 areas with ancient olive trees have been enabled in both municipal (*Alcanar, Canet lo Roig* and *Vinaròs*) or private estates through agreements (*la Sénia, Godall, la foia de Ulldecona, Traiguera, Càlig, Canet lo Roig, Sant Jordi,*

Rossell and *Benicarló*). The areas are signposted with 3 different languages and are freely and easily accessible, in spite of the museum of *El Arión*, in which the council of *Ulldecona* organizes guided visits. Moreover, in *Cervera del Maestre* (*Castellón*), *Santa Bàrbara* and *Ulldecona* (*Tarragona*) there are historic oil mills totally restored. Some itineraries to do on foot or by bicycle have been enabled, which connect the museums and the areas and go through traditional olive groves and its environment (dry stone buildings, fauna, and flora). Altogether create the landscape known as “the sea of olive trees”.



Natural museums of ancient olive trees (*Ulldecona* and *la Jana*)
 Areas of ancient olive trees (*Sant Jordi* and *Càlig*)

Travelling exhibition Ancient Olive Trees *Territorio Sénia*. 33 drop-down panels of 200x80 cm were designed and include amazing photographs of the best olive trees. It has been recently remade as new ancient olive trees have been found in some municipalities. The exhibition has received funding from the Provincial Councils of *Castellón*, *Tarragona* and *Teruel*.

Scientific congresses on the ancient olive trees and their oil. Since 2011, it has been celebrated an annual congress with the participation of leading experts at a national and international level. In these congresses, the new harvest of olive oil from both ancient and single-variety olive trees is exposed as well as the exhibition and the recent publications.

Scientific studies and works. Apart from the complete and updated Inventory of the ancient olive trees in the *Territorio Sénia*, it is also worth mentioning studies from the *Fundación Alícia* (Gastronomy of the olive oil from ancient olive trees and Cuisine of olive oil from the traditional varieties of the *Territorio Sénia*) and the IRTA (Investigation Centre of the Government of Catalonia) on both the genotype of the ancient olive trees and the quality of their oils or the ones from traditional varieties.

Publications. Published books: “Ancient olive trees, living monuments”, “Gastronomic guide of the olive oil from the ancient olive trees in *Territorio Sénia*”, “*Olea Europaea “Farga”*” which contains a prologue by Federico Mayor Zaragoza, “Cuisine of olive oil from traditional varieties of the *Territorio Sénia*” with a prologue by Ferran Adrià and “VIA AVGVSTA olive oil, essence of the *Territorio Sénia*” which has a foreword by the chef Joan Roca. Moreover, there are also leaflets about oleotourism “Ancient olive trees in the *Territorio Sénia*” and gastronomy “Extra virgin olive oil from traditional varieties of the *Territorio Sénia*”.

Finally, it is a great satisfaction that in the page 166 of the book FAO IN PICTURES there is included a picture of the Ancient Olive Trees in the *Territorio Sénia*, courtesy of the *Mancomunidad*.

All that has previously been described clearly demonstrate the importance of this System. However, there is another important factor which is the benefits that the owners obtain from the ancient olive trees of the *Territorio Sénia*. The olive oil from these trees is paid at double, if it meets all the requirements. Therefore, two important results are obtained:

- The owners obtain greater benefit while continue to preserve the olive trees.
- Thanks to these benefits, the project has been consolidated as it is based on self-funding and is able to ensure its future viability.

II.1.3. For its importance in global challenges

The Agricultural System Ancient Olive Trees of the Territorio Sénia contributes to the Objectives of Sustainable Development (ODS) of 2030 Agenda of Sustainable Development of United Nations. Among the 17 ODS, the 11 ones that are directly related are described below:

ODS 1. Eradication of poverty.

The Territorio Sénia is a predominantly rural area: low population density, municipalities with risk of depopulation, negative migration balance, high percentage of people employed in primary sector.

The Agricultural System Ancient Olive Trees contributes to reduce these problems: creates employment, makes little exploitations more efficient and profitable, promote economic diversification to non-agricultural activities (trade, tourism). The aim is to improve opportunities of income generation in rural areas, making them more attractive to live in and to reduce migration to urban areas.

ODS 2. Zero Hunger

The Agricultural System Ancient Olive Trees provides key solutions for the development of the Territorio Sénia. It is based on the production of a healthy food (olive oil) and, at the same time, it generates income gains in the area. It is a system based on the population's life improvement within the territory, specially farmers, while protecting environment as well.

ODS 3. Good health and welfare

The extra virgin olive oil has many beneficial properties for health. It contains great quantities of monounsaturated fats and the oleic acid significantly reduces the risk of coronary heart diseases. Moreover, it contains antioxidants and vitamin E that reduce cholesterol, fight free radicals and prevent ageing.

ODS 5. Gender equality

The role of women within the System Ancient Olive Trees Territorio Sénia is very important and has great presence in all sectors. In local policy, all councils have women within their governing bodies and women are mayor in 6 out of the 27 municipalities. In the sector of the cooperatives, women are important both as partners and employees, specially in packaging and administration departments. In agriculture, women are important in both collection and management.

ODS 8. Decent Employment and Economic Growth

Agriculture has and has a key role within the economy in this Territory. It represents the 13.09% of employed population. In 10 municipalities, more than the 25% of population is dedicated to agriculture and, in some others, this figure is around the 50%. Nowadays, more and more young people are working in recovery works and the put on value of abandoned ancient olive trees as an alternative for the future, as it opens new expectations of job opportunities.

ODS 9. Industry, Innovation and Infrastructure e Infraestructura

The System Ancient Olive Trees Territorio Sénia includes a great diversity of parties: public sector (autonomic and provincial administrations, councils), private sector (cooperatives, associations, companies with 4000 partners approximately). All these entities and bodies cooperate under the coordination of the Mancomunidad Taula del Sénia in this common project. This System is basically agriculture but is also involved in the dinamization of social and economic fabric of the territory, from agrifood industries to tertiary sector: tourism, restaurants, etc.

ODS 10. Reduction of inequalities

At a demographic level, the distribution of the population in the territory is heterogeneous, with the 71% of the inhabitants living in coastal municipalities whose surface area only represents the 12% of the total. This inequality is also reflected in economic data, with economic activity and wealth concentrated in the coastal areas. Therefore, it is an area with a strong territorial imbalance, where the inland municipalities have very low population density, high aging and low income levels. The Agricultural System of Ancient Olive Trees can contribute to reduce these territorial inequalities by the generation of quality employment, which will favor the settlement of the population in the inland areas.

ODS 12 – 13. Production and responsible consumption and Climate Action

The Agricultural System Ancient Olive Trees is based mainly on the conservation and efficient use of natural resources, reduces the environmental and climatic footprint and guarantees its conservation for future generations. It is about making agriculture more productive and sustainable, while ensuring the sustainability of natural resources.

The olive grove of the Sénia Territory is traditional rainfed with varieties totally adapted to the climate conditions in the area. This means that it does not need irrigation, so it only makes use of environmental conditions that nature puts at its disposal and does not compromise the future of the following generations due to the excessive exploitation of resources.

The useful life of the traditional olive groves is unlimited. The fact of not having to renew the trees every certain time has environmental and also economic benefits.

The fertilization of the fields is done using organic fertilizers from other activities of the primary sector of the territory (pig and poultry farms, sheep and cattle sector).

During the last year, in the Territorio Sénia, it has been decided to control the plague of the olive fruit fly using traps. These traps can be bought or made homemade by recycling transparent plastic bottles to which sexual or food attractants are added. The use of these traps is a form of ecological control of the olive fly populations and reduces the application of chemical treatments.

The byproducts of the oil are used as biomass both for the own operation of the oil mills (heating, hot water), and also as fuel for the pig and poultry farms. The use of this type of biomass as renewable energy allows a strong economic saving and represents environmental advantages that other fuels are not able to guarantee.

All of these actions reduce the costs of agricultural practices for the environment point of view of resource degradation and contribute to mitigate climate change.

ODS 15. Life of terrestrial ecosystems

Throughout history, olive oil has been an essential element in the diet in this part of the world and has become an economic element, a colonization agent, a sacred food or a representation of one's own identity. In all the coasts of the Mediterranean Sea, the olive tree has been cultivated and its juice has been consumed, the olive oil.

ODS 16. Peace, faith and solid institutions

The success of the agricultural system ancient olive trees Territorio Sénia is largely due to the support and participation of the population of the area, private sector, governments (local, regional and national) and also technical and scientific cooperation.

The Mancomunidad Taula del Sénia has managed to involve and inspire an entire territory and its institutions to work jointly and in coordination to preserve and revalue this important natural heritage and turn it into a resource for the sustainable development of the area.

The Agricultural System Ancient Olive Trees is also closely related to the objectives of FAO:

To help to eliminate hunger, food insecurity and malnutrition. Making agriculture, forestry and fisheries more productive and sustainable

The abandonment of land and the consequent decrease in the agricultural area are major concerns in the area. The progressive aging of rural population and the lack of competitiveness of the agricultural sector are the main causes of this loss of cultivated land. The reduction of the agricultural area used is translated into a waste of a scarce and non-renewable productive resource.

In recent decades there has been an abandonment of many olive farms, a trend that has slowed down in recent years due to the crisis in the industrial sector and the initiatives of young farmers who are betting on the cultivation and revaluation of farms with olive trees of traditional varieties and ancient olive trees. The agricultural system of ancient olive trees is based mainly on the active participation of the population, the diversification of incomes, the conservation of the landscape and traditional varieties and a better management of the inputs.

Promote inclusive and efficient agricultural and food systems

The long history of the olive tree as a cultivated tree and the longevity of the plantations, in many cases ancient olive trees, are a clear index of their "capacity to remain", of being maintained in the useful time (sustainability).

The cultivation of olive trees has undergone profound changes in recent decades. In traditional agriculture, the olive grove was always part of an agrarian system with other crops: cereal, wine with strong interrelations and were the basis of the population's livelihood (oil, bread and wine), covered other needs (firewood, lighting) and maintained the cattle. All of these without generating waste, because, instead, these (pomace, alpechin, manure) were used to close the cycle of mineral nutrients.

At present, in the Territorio Sénia some of these interrelationships are still maintained but they have been adapted to the reality of the new times and new relationships have appeared with other economic sectors of the territory, such as tourism, the agri-food

industry or restoration. It is a transversal agricultural system that involves many economic sectors of the territory, which makes it an integrating, efficient and sustainable system.

It also ensures the preservation of a cultural landscape molded over the centuries and the survival of a large concentration of ancient olive trees, together with the knowledge of traditional agricultural practices and productive structures of cultural value, such as terraces, terraces, buildings, etc.

The existence in the Territorio Sénia of more than 5,000 ancient olive trees makes it a unique area in the world, and its location next to the ancient Roman Via Augusta, makes them witnesses of our history since the time of the Romans.

To reduce rural poverty

The agricultural system Ancient Olive trees generates employment, contributes to making small farms more efficient and profitable, encourages economic diversification towards non-agricultural activities (commerce, tourism). All this represents higher income in rural areas and a good tool to fight depopulation.

Comparison with the GIAHS "Olivares of the slopes between Assisi and Spoleto"

We were 6 years ago in Perugia with Professor Luciana Baldoni (CNR-Istituto di Genetica Vegetale) and we visited some ancient olive trees, but we did not go to the GIAHS site "Olivares of the slopes between Assisi and Spoleto", so we do not have a wide knowledge of it.

From the documentation consulted we have seen that in the Assisi-Spoleto, olive trees are cultivated in stone terraces and that these terraces are what make this site such a unique system. The oils are within the PDO "Umbria" and the main varieties are: Moraiolo, Frantoio and Leccino.

On the other hand, in the system of the "Ancient Olives Territorio Sénia", what defines it is the conservation and recovery of a very important group of ancient olive trees that are in production and also the high-quality oil that is extracted from them. There are 3 DOP: "Valencia", "Baix Ebre-Montsià" and "Bajo Aragón", but also the olive oil only from millenary olive trees is certified by the Guarantee Mark "Aceite Farga Milenaria."

Regarding the reason of the conservation of so many ancient olive trees in our area, we believe that it is because they are almost all of the variety 'Farga'. They are very old trees, of slow growth and large dimensions, but they can be molded and even recovered, after years of abandonment, by pruning. And, another reason, is the traditional cultivation system: low density and totally rainfed plantations, but with dry stone margins and furrows in the ground to make the most of rainwater. There are usually 2/3 varieties in each farm (Farga, Morruda, Sevillenca) to improve the pollination of flowers and future olives. They are trees that resist very well both the drought seasons (years 2016 and 2017) and the heavy rains (2018), as they are large and vigorous trees and do not suffer irreversible damage, as happens with others.

Also the characteristics of the olive oil 'Farga' explain its conservation, because it is very fruity and its flavor is very balanced. In addition, due to its high polyphenol content, its positive attributes are preserved for two years. For this reason, it is very appreciated especially in the new international markets, paying € 15 for a half-liter bottle.

Finally, the growing love of the farmers and many other people for these ancient olive trees also helps to understand the reason for their conservation. It is quite frequent that some of them have their own name such as 'Farga del arión', 'Olivo de los 4 patas',

'Olivo Mater', 'the couples' or 'the. In addition, after the mobilization of citizens against the plundering of these olive trees and the joint response of individuals and administrations, some who hesitated to sell them, are now very satisfied for not have done so and thus, be able to transmit them to their successors.

As a testimony of a person, Professor Luciana Baldoni, with whom we were in Italy and she in turn came here, we enclose her words published on p. 25 from the book "Olea europaea 'Farga' Territorio Sénia, Tomás & Milada Micek."

Gli olivi antichi del Territorio Sénia

Studio l'olivo da oltre 30 anni, ne ho identificato varietà e cercato esemplari selvatici, analizzando a lungo il comportamento di questo albero, le sue potenzialità, la storia e il mito che circonda la sua origine.

Cammin facendo, ho cominciato a scoprire l'esistenza di alcuni esemplari di età molto avanzata. Questo piccolo repertorio di alberi antichi è venuto popolandosi di altri esemplari, sempre più maestosi e dalle forme più bizzarre.

In Italia, Grecia, Israele, Iran, Portogallo, Spagna ho visto olivi immensi, dalle chiome sagomate dal vento e i tronchi scavati dalla mano dell'uomo e dalle ingiurie del tempo. Qualche volta sono alberi abbandonati o rinselvaticati, altre volte onorati e venerati come piante sacre. Sono isolati e dispersi in contesti inadatti, oppure tutti insieme, a migliaia, ad occupare territori immensi. Curiosamente, quasi mai essi corrispondono alle varietà attualmente coltivate. Forse si tratta di relitti di vecchie forme di olivicoltura, oppure costituiscono semplicemente gli unici alberi in grado di sopportare le avversità del clima e la povertà del terreno o sono individui salvati dall'abbattimento perché testimoni di eventi straordinari.

È sempre difficile dire quale sia la loro età, perché il fusto dell'olivo cresce in maniera diversa da quello di altre specie, formando costolature che si sostituiscono al tronco originale, il quale lentamente si deteriora e scompare, lasciando il posto ad una cavità irregolare, mentre il nuovo fascio di fusti cresce e si contorce, deformandosi.

Inoltre, la velocità di accrescimento e la dimensione

finale dell'albero sono sotto il controllo della varietà cui appartiene. Non va poi dimenticato che l'olivo è una pianta coltivata e, come tale, sottoposta ad interventi come concimazioni e potature, che possono averne condizionato la crescita e modificato la struttura, rendendo ancor più difficile stimare la data di piantagione.

Gli olivi del Territorio Sénia rappresentano un esempio emblematico di insediamento antico, anteriore ai 600 anni e realizzato in maniera pianificata perché ha comportato la coerente sistemazione del terreno, con il modellamento delle superfici, la meticolosa rimozione delle pietre e la loro ricomposizione in muretti, terrazze, sentieri.

Gran parte degli oltre 4.676 olivi monumentali appartiene ad una sola varietà, la Farga, di particolare interesse per il suo peculiare profilo molecolare, che la distingue dalle altre varietà del Mediterraneo.

Queste piante, ora catalogate una ad una, documentano il perfetto equilibrio con la terra e le pietre su cui crescono e testimoniano l'alleanza stabilita con l'uomo, che li ha piantati, li ha curati per secoli ed è ancora in grado di ricavarne un olio prezioso.

Nonostante la loro mole, questi alberi sono pur sempre fragili ed effimeri, assoggettati ai capricci del clima, ai cambiamenti economici, alle mode del momento. Auguriamoci che essi possano continuare ancora per altri 1000 anni a raccontare una parte importante della storia agricola del mondo.

Luciana Baldoni
CNR - Istituto di Genetica Vegetale, Perugia (Italia)

II.1.4. For its importance for biocultural diversity

Olive groves of traditional varieties. The importance of the olive growing within the whole *Territorio Sénia* is very high, as it exceeds the 50% of the cultivated areas and approximately the 16.5% of the total surface (in spite of the absence of olive trees in the 5 mountain municipalities, which cover the 34% of the territory, due to weather conditions). The intermediate area owns the highest concentration of olive groves in its cultivated surface, in the following sequence: *la Sénia* (96%), *Canet lo Roig* (93%), *la Jana* (87%), *Mas de Barberans* (87%), *Rossell* (84%), *Freginals* (75%), *Godall* (67%), *Ulldecona* (67%), *Traiguera* (65%), *Santa Bàrbara* (55%), *San Rafael del Río* (44%), *Cervera del Maestre* (41%), *Sant Jordi* (31%) and *Càlig* (30%). Another common feature of the 34.189 hectares of olive growing is that almost all of them are rainfed crops (irrigated crops have a very low percentage) and intensive plantations hardly exist.

Traditional varieties of olive trees in the *Territorio Sénia* are: *Farga*, *Morruda*, *Sevillenca* (in Catalan and Valencian areas) and *Empeltre* (in Aragon). The first three varieties are only found within this area and constitute the D.O. *Baix Ebre-Montsià* and are part of the D.O. *Comunidad Valenciana*. By contrast, the variety *Empeltre* is part of the D.O. *Bajo Aragón* and spread through all Aragon Community among other places. The four varieties are old and native and also live together with other minority varieties: *Canetera*, *'Cuquello*, *Llumeta*, *Marfil*, and *Manzanal* (altogether represent less than the 10% of the total).

The existing problem is that in the great majority of places in the world, both old and new plantations (especially in emerging countries) are based on intensive exploitation systems (laboratory varieties, intensive irrigation or mechanized works). As publicity is focused on its high profitability, it is necessary to consolidate the Agricultural System of Ancient Olive Trees *Territorio Sénia* in order to preserve it to current and future generations. Moreover, this system would serve as an example to other places, especially those in the Mediterranean, where traditional olive groves exist as well as some monumental olive trees.



Ancient olive tree (*la Sénia*)

Ancient olive trees. This is the distinctive element and the origin of the project on Ancient Olive Trees *Territorio Sénia*. In front of population's concerns about the plunder of some of the most monumental olive trees, the *Mancomunidad* in cooperation with the *Asociación* and other collaborators made an inventory of the ancient olive trees in the *Territorio Sénia*. The initial result was 4.080 ancient olive trees, which has increased to 4.960 specimens nowadays (the 96% of them are of the variety *Farga*).

From this, some projects have been developed and focused on the preservation and the put on value of these ancient olive trees and their oils. Moreover, it helped to make their owners and population aware of the significance of this exceptional agricultural, historic, cultural, social, environmental and sustainable heritage. This system of olive growing has particular features which are highlighted:

- There are almost 5.000 ancient olive trees included in the inventory. All of them are alive and put in production. More than the 20% produce certified oil within the Guarantee Mark *Aceite Farga Milenaria*.
- These ancient olive trees are surrounded by 2.400.000 olive trees from traditional, native and exclusive varieties and are located in an environment plenty of margins and other dry stone buildings as well as their fauna and flora, which create their environment. There, these trees find their shelter and food, preventing the loss of biodiversity.

In conclusion, the System of Ancient Olive Trees in *Territorio Sénia* is significant in global challenges that threaten the biocultural diversity. Firstly, it is worth mentioning that within their 207.000 hectares, the 64% are considered protected areas: Natura 2000 network, Natural Parks and Biosphere Reserve. Moreover, the 50% of the cultivated areas own olive groves from traditional varieties, which are located in an environment of dry stone buildings and a specific fauna and flora. Therefore, the whole is an excellent example of biodiversity. Finally, the presence of almost 5.000 ancient olive trees included in the inventory gives an incalculable value. All these trees are alive and put in production, which have been a decisive factor to ensure its preservation, help to transform this traditional system and its associated heritage. It is a resource of economic, cultural, touristic and environmental development and, thereby, sustainable.



Ancient olive tree (*Mas de Barberans*)

Protected areas. Within the 207.000 hectares that form the *Territorio Sénia*, there are some types of protection: Natura 2000 network (with many SCI and SPAB areas, which cover the 50% of the total surface), Natural Parks (*Els Ports* and *Delta del Ebro* in Catalonia and *La Tinença de Benifassà* in Valencian community. Altogether cover the 17% of the territory) and the Biosphere Reserve (it covers all the Catalan areas, which is the 25% of the total surface). There are many areas in which two or three types of

protection are overlapped, so the real protected surface is the 64%, which means an important figure.

II.1.5. For being a good example of public-private cooperation

This system was originated due to popular awareness in front of the plunder of some of the most monumental olive trees in this territory, at the end of the 20th century and the beginning of the current one. Therefore, the *Mancomunidad Taula del Sénia* in 2006 and the *Asociación Territorio Sénia* in 2007 focused their first projects on them.

From this, working together the *Mancomunidad* and the *Asociación* made an inventory of 4.080 ancient olive trees. Afterwards, some projects are developed dedicated to the preservation and the put on value of these ancient olive trees with very positive results.

The following list includes all people and institutions that participate in these projects:

- *Mancomunidad Taula del Sénia*, formed by 27 municipalities from Valencian Community, Catalonia and Aragon. Local entity with projects focused on the improvement of their inhabitants' lives.
- Councils, coordinated by the *Mancomunidad*, which develop local actions.
- *Asociación Territorio Sénia*, formed as 50% by economic sectors in the area and as 50% by the own *Mancomunidad*. From the beginning, they work in cooperation in all projects.
- 10 oil mills (6 in Valencian community and 4 in Catalonia), which produce 12 brands of olive oil from ancient olive trees within the Guarantee Mark *Aceite Farga Milenaria*. Altogether, the 6 cooperatives, including some of second degree, exceed the 3.300 members.
- Owners of the olive trees, some of them ancient olive trees (it is calculated that they could be a total of 300). This year, 50 owners from 10 different municipalities have produced olive oil from their ancient olive trees.
- Restaurants. Two books have been published in cooperation with the oil mills and 52 different restaurants. Among them, there are 3 Michelin-starred restaurants.
- Touristic companies. Cooperation between this sector and restaurants and the oil mills has been started.
- Civic and cultural entities or associations, which have been cooperated in the Project on olive trees as well as in the European Heritage Days.
- Educational centers, which also cooperates in both projects.
- The Government of Spain, especially the Ministry of Agriculture, which has cooperated in different projects and now it fully supports our application to GIAHS.
- Autonomous communities (Valencian Community, Catalonia and Aragon). There has been a total cooperation in projects on employment, among others and they have committed to support projects on the ancient olive trees.

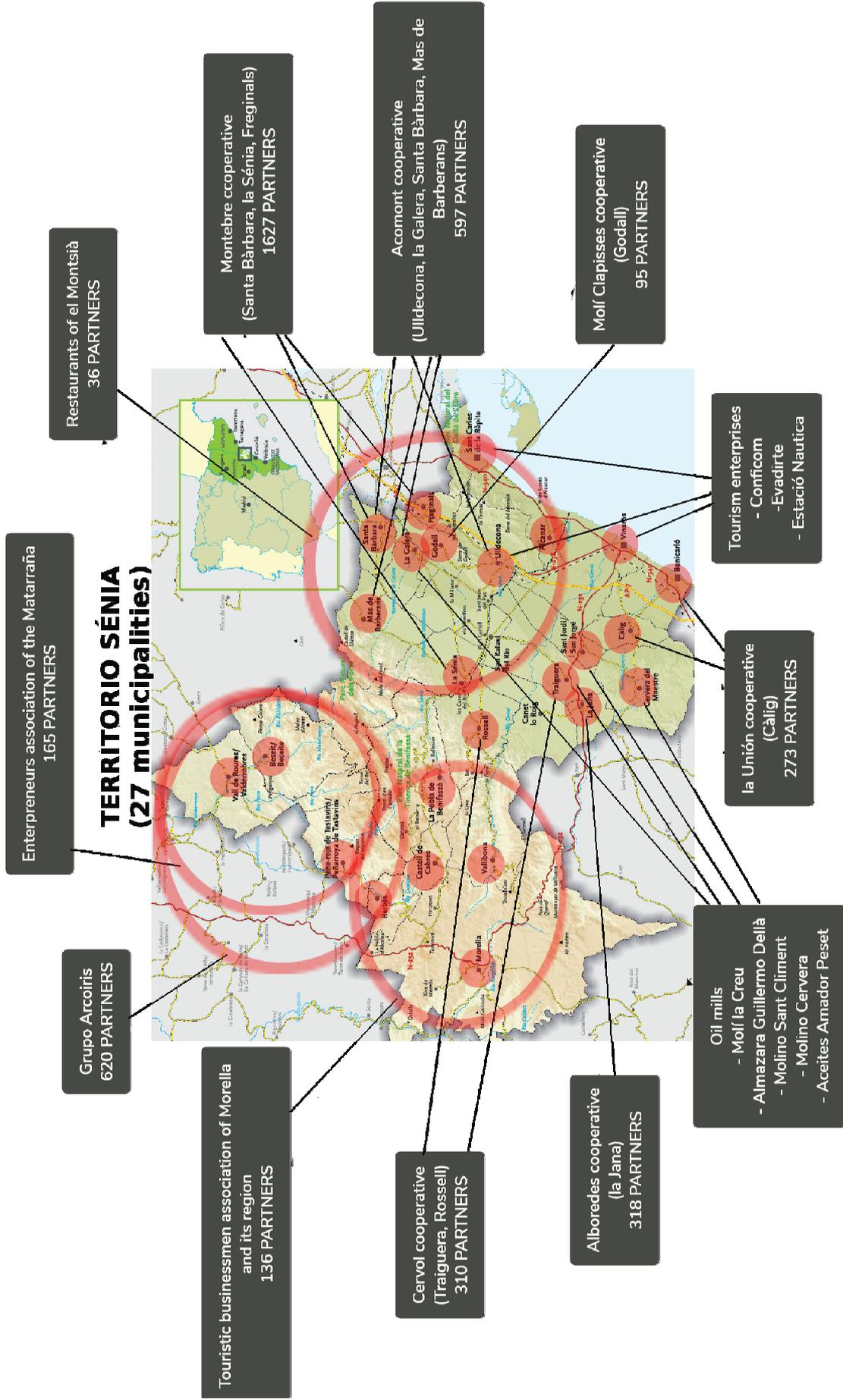
- Provincial councils (*Castellón, Tarragona* and *Teruel*), which also supports the ancient olive trees.
- Foundations: *Biodiversidad, Alícia, Dieta Mediterránea, Catalunya-la Pedrera...* They have occasionally cooperated with our projects, especially the *Fundación Alícia* in projects on gastronomy.
- Investigation centers: IRTA, IVIA, CITA (one in each autonomous community). It is worth mentioning the cooperation with the IRTA of the Government of Catalonia.
- Other centers: the University of *Córdoba*, the Polytechnic University of Madrid, IFAPA, PCO, AEMO.

All in all, in spite of the great diversity of involved institutions and participation in the System of Ancient Olive Trees *Territorio Sénia*, under the management of the *Mancomunidad* and in cooperation with the *Asociación*, this system works in a holistic manner (as a whole).

Apart from the 27 councils, there are different entities (cooperatives, associations, companies) that overcomes the 4000 partners.

In the following schemd there are represented the different entities, associations, cooperatives that actively participate in the development of the agricultural system ancient olive trees that are part of the different municipalities members of the *Mancomunidad Taula del Sénia*.

Among these entities, there are agricultural cooperatives, trade associations, touristic companies, private oil mills, tertiary sector companies, etc.



II.1.5. For the awards and the recognitions won: both national and international



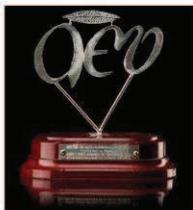
2011 - PREMIO LLORENÇ TORRADO

Premio Gastronómico Llorenç Torrado en la categoría de Productores al Aceite de Olivos Milenarios del Territorio Sénia.



2012 - FUNDACIÓN DIETA MEDITERRÁNEA

Diploma de Honor de la Fundación Dieta Mediterránea al Aceite y Olivos Milenarios del Territorio Sénia.



PREMIOS AEMO (Asociación Española Municipios Olivo)

2006 - Olivo Farga Arion (Ulldecona)
 2011 - Difusión Cultura Olivo
 2011 - Olivo Mater (Ulldecona)
 2013 - Difusión Cultura Olivo
 2014 - Olivo Las Parejas (La Jana)
 2016 - Olivo 4 Patas (Canet lo Roig)
 2018 - Olivo de Sinfo (Traiguera)



2013 - PREMIO HISPANIA NOSTRA

Premio Hispania Nostra - Fundación Banco Santander a la Conservación del Patrimonio como factor de Desarrollo económico y social, al programa Olivos Milenarios del Territorio Sénia.



2014 - PREMIO EUROPA NOSTRA

Premio Unión Europea de Patrimonio Cultural / Premios Europa Nostra al Paisaje Histórico de Olivos Milenarios del Territorio Sénia.



2015 - PREMIO DEL PAISAJE CONSEJO DE EUROPA

Mención especial del Comité de Ministros del Consejo de Europa al Paisaje de Olivos Milenarios del Territorio Sénia.



2017 - COI (Consejo Oleícola Internacional)

Elección del Territorio Sénia para la celebración del Día Mundial del Olivo en España



2018 - ONDA CERO Radio

Premio de Medio Ambiente a la Mancomunidad Taula del Sénia.



Hereunder, there are described the testimonies of the Jury of the most significant Awards won, which are the best confirmation of the significance of the GIAHS Ancient Olive Trees *Territorio Sénia*:

MEDITERRANEAN DIET FOUNDATION

“In recognition to their valuable work in the preservation of the ancient olive trees within the *Territorio Sénia* and its environment, which contributes to safeguard the Mediterranean landscape.”

HISPANIA NOSTRA AWARD

“As they join the different dimensions of the heritage: historic, cultural, territorial, landscape, environmental, productive, educational or social. For their effort in coordinating and working together with different municipalities located in three different autonomous communities, which have been united to save a heritage at risk. They started carrying out an inventory of the ancient olive trees in their territory (4.080 specimens in 2009), which was complete and exhaustive but permanent as well. Likewise, it must be highlighted the exemplar awareness of some farmers who have put on value this immemorial heritage in front of agricultural profitability criteria. Moreover, this Juries value as a very positive reference the results of both public-private cooperation and different private sectors. The Project has promoted the improvement and the diversification of the economy in the area, an increase of the profitability of the owners, who are the best protectors of their valuable agricultural heritage and the quality of their products. The preservation and the improvement of the ancient olive trees contribute to the consolidation of a Spanish and Mediterranean identity as well.”

EUROPEAN UNION AWARD FOR CULTURAL HERITAGE / EUROPA NOSTRA AWARD

“It can be found ancient olive trees in the South of Europe, but it can not be compared to the great concentration in the *Territorio Sénia*, in the Northeast of Spain, where this project is set. This territory is located in the meeting point of the three ancient reigns (Aragon, Valencia and Catalonia) and owns approximately 4.700 ancient olive trees of the variety *Farga*, which produce a high quality olive oil. Most of them are located along the old Roman *Via Augusta* and it is thought they were planted in that time. The origin of the olive trees is at least from the Phoenicians and Roman ages. These specimens continue to produce an extraordinary olive oil, despite they have had an incredible long life. This Jury, as the majority of people, has been impressed by the pictures of these majestic trees and is pleased to acknowledge the efforts made to ensure their preservation in a wide community of participants. Naturally, there are other places with ancient olive trees in Spain or Mediterranean countries, but this singular concentration of unique trees can only be found in there. This project is focused on the protection of this rich and beautiful inheritance.”

EUROPEAN LANDSCAPE AWARD OF THE COUNCIL OF EUROPE

“The preservation and the protection of the olive trees as well as their environment and singular landscape (known as the “sea of olive trees”) are part of the main objectives of the project, which aims to promote the values of the landscape, heritage and culture related to the oldest olive trees while ensuring a contribution to the sustainable development of the territory. In front of local population’s concerns about the future of the 4.800 ancient olive trees included in the inventory, the cooperation between local, regional, national and European institutions and the owners and economic sectors has helped to the preservation and the put on value of these olive trees and their landscape”.

Characteristics of the Proposed GIAHS Site

Food and livelihood security

Agro-biodiversity

Local and traditional knowledge systems

Cultures, value systems and social organisations

Landscapes and seascapes features



Food and Livelihood Security



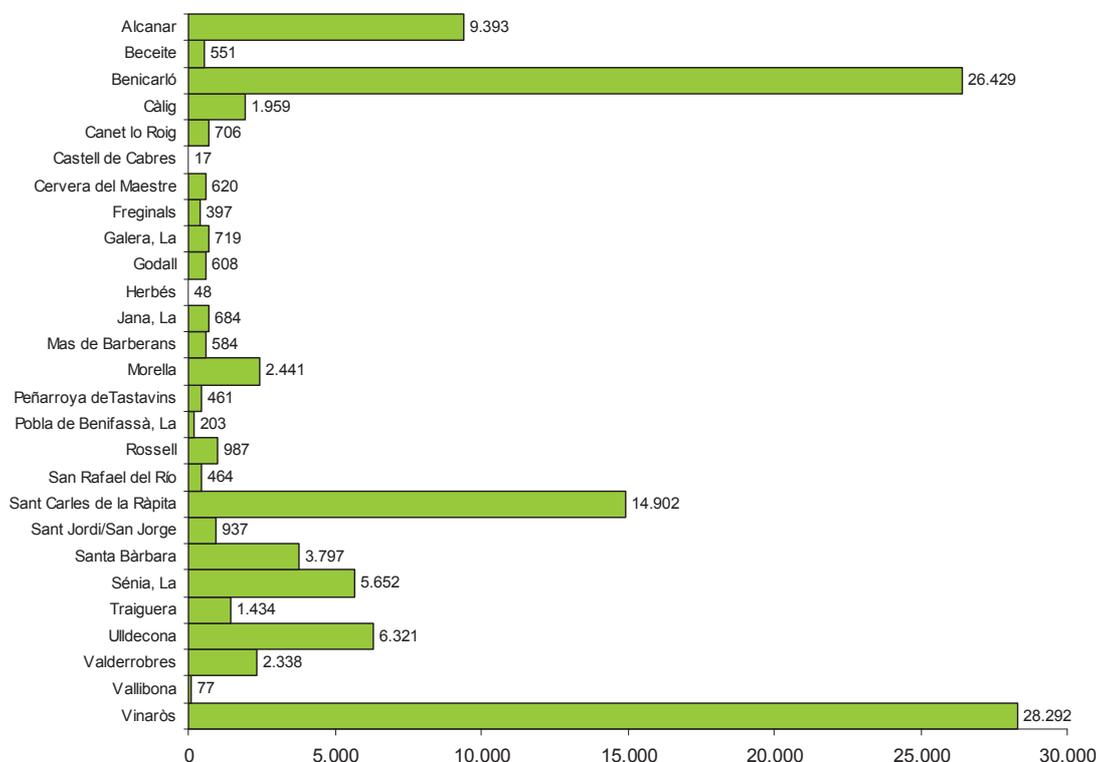
II.2.1. Food and Livelihood Security

Importance of the agricultural sector within the *Territorio Sénia*

At demographic level, the municipalities members of the *Mancomunidad Taula del Sénia* have a total population of 111.021 inhabitants according to data from the INE on 1 January 2017. Population's distribution within the territory is heterogeneous as the 70% of the inhabitants are found in coastal towns whose surface represents the 12% of the total area. Within the *Territorio Sénia*, there are both small municipalities such as *Castell de Cabres*, which is the smallest one with only 17 inhabitants, or large ones like *Vinaròs*, which has 28.292 inhabitants.

Both population's distribution and density of each municipality create a map in which most of the population is found in the coastline and along the courses of the river *Sénia*. Furthermore, there also exist mountain municipalities with low densities: *Castell de Cabres* (0,6), *Vallibona* (1,1) and *La Pobla de Benifassà* (2,2). Only five of the municipalities members of the *Mancomunidad* overcome the 100 inhabitants/km²: *Benicarló*, *Vinaròs*, *Alcanar*, *Sant Carles de la Ràpita* and *Santa Bàrbara*. According to the population structure by age, it is worth mentioning that the 19% of the population are more than 65 years old and one-third of the inhabitants of half of the municipalities members of the *Mancomunidad* are above this age.

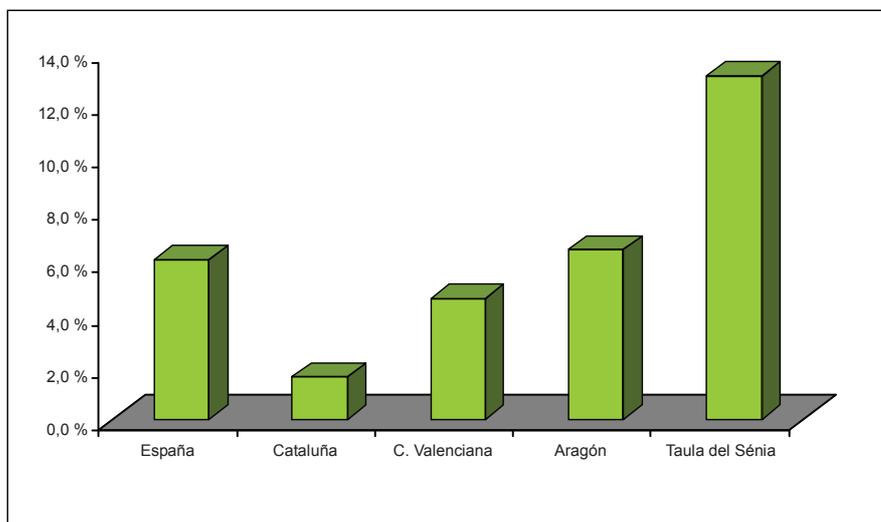
Therefore, it is a territory with a strong territorial imbalance between coastal and mountain municipalities, with low population densities and high aging rates. Moreover, 16 municipalities members of the *Mancomunidad* are highlighted as they are at risk of extinction for having less than a thousand inhabitants and a high decrease in census.



Population of the *Mancomunidad Taula del Sénia* by municipalities (INE 2017)

Regarding economic sectors, agriculture has a crucial role within economy in this territory. It represents the 13.09% of working population, which is far above the national

(6.10%) and autonomous (1.64% in Catalonia, 4.62% in Valencian Community and 6.46% in Aragon) means as it is shown in the graph below.



Working population in the agricultural sector (December 2017).

In some municipalities, working population in the agricultural sector can reach high numbers. There are 10 municipalities with the 25% of their population dedicated to agriculture; in *Peñarroya de Tastavins*, *Canet lo Roig* and *La Jana* it can be the 50% approximately. It is worth mentioning that *Canet lo Roig* and *La Jana* owns the highest concentration of ancient olive trees in the territory, so the olive tree is practically the only crop there.

In the *Territorio Sénia*, distribution by economic sectors is the following: agriculture 13%, construction 11%, industry 11% and services 65%. It is highlighted the importance of the agriculture, in spite of most population are employed at services sector.

During the last decades of the 20th century, the industry sector increased considerably in the territory and got labour from the primary sector, which resulted in the abandonment of some lands, the ageing of the sector and the dedication to agricultural work as a secondary activity. Recently, possibly due to economic crisis in other sectors, people are returning to agricultural activities.

Although on many occasions the activities of the primary sector (agriculture, livestock and fishing) are underestimated, they are necessary and essential for people's livelihoods without doubt. In many cases, these activities are rejected by young people as they prefer gainful occupations with fixed salaries and timetables to insecurities that agricultural activity involves.

Affiliates to social security by sectors (December 2017)									
	Agriculture		Construction		Industry		Services		Total
ALCANAR	878	25,99 %	304	9,00 %	140	4,14 %	2.056	60,86 %	3.378
BECEITE	30	24,00 %	20	16,00 %	9	7,20 %	90	72,00 %	125
BENICARLO	985	12,72 %	621	8,02 %	1.254	16,20 %	4.876	62,98 %	7.742
CALIG	95	22,62 %	69	16,43 %	62	14,76 %	182	43,33 %	420
CANET LO ROIG	72	53,33 %	8	5,93 %	10	7,41 %	41	30,37 %	135
CASTELL DE CABRES	-	0,00 %	-	0,00 %	-	0,00 %	5	100,00 %	5
CERVERA DEL MAESTRE	15	13,64 %	15	13,64 %	5	4,55 %	66	60,00 %	110
FREGINALS	24	16,11 %	-	0,00 %	-	0,00 %	103	69,13 %	149
GALERA, LA	86	30,39 %	26	9,19 %	20	7,07 %	151	53,36 %	283
GODALL	68	31,78 %	29	13,55 %	10	4,67 %	107	50,00 %	214
HERBES	11	40,74 %	-	0,00 %	10	37,04 %	6	22,22 %	27
JANA, LA	81	47,65 %	12	7,06 %	18	10,59 %	47	27,65 %	170
MAS DE BARBERANS	70	33,65 %	27	12,98 %	5	2,40 %	106	50,96 %	208
MORELLA	140	12,76 %	80	7,29 %	158	14,40 %	719	65,54 %	1.097
PEÑARROYA DE TASTAVINS	102	57,63 %	11	6,21 %	16	9,04 %	48	27,12 %	177
POBLA DE BENIFASSA, LA	11	17,74 %	8	12,90 %	-	0,00 %	35	56,45 %	62
ROSSELL	70	23,18 %	16	5,30 %	145	48,01 %	61	20,20 %	302
SAN RAFAEL DEL RIO	31	25,62 %	-	0,00 %	39	32,23 %	38	31,40 %	121
SANT CARLES DE LA RAPITA	399	7,96 %	670	13,37 %	270	5,39 %	3.673	73,28 %	5.012
SANT JORDI	38	12,22 %	12	3,86 %	123	39,55 %	124	39,87 %	311
SANTA BARBARA	273	19,08 %	213	14,88 %	96	6,71 %	885	61,84 %	1.431
SENIA, LA	153	8,39 %	492	26,99 %	91	4,99 %	1.087	59,63 %	1.823
TRAIQUERA	134	29,65 %	52	11,50 %	89	19,69 %	164	36,28 %	452
ULLDECONA	225	11,17 %	475	23,57 %	69	3,42 %	1.246	61,84 %	2.015
VALDERROBRES	175	13,07 %	107	7,99 %	391	29,20 %	666	49,74 %	1.339
VALLIBONA	-	0,00 %	-	0,00 %	-	0,00 %	8	53,33 %	15
VINAROS	471	5,67 %	531	6,39 %	1.000	12,04 %	6.312	75,97 %	8.309
SPAIN	1.126.212	6,10 %	1.149.341	6,23 %	2.218.552	12,02 %	13.963.954	75,63 %	18.462.463
CATALONIA	53.854	1,64 %	475.416	14,46 %	189.811	5,77 %	2.569.510	78,13 %	3.288.591
VALENCIAN COMMUNITY	84.104	4,62 %	253.251	13,92 %	111.004	6,10 %	1.338.539	73,58 %	1.819.128
ARAGON	36.067	6,46 %	33.603	6,02 %	98.282	17,59 %	390.681	69,94 %	558.633
M. TAULA SÈNIA	4.637	13,09 %	3.798	10,72 %	4.030	11,37 %	22.902	64,64 %	35.432

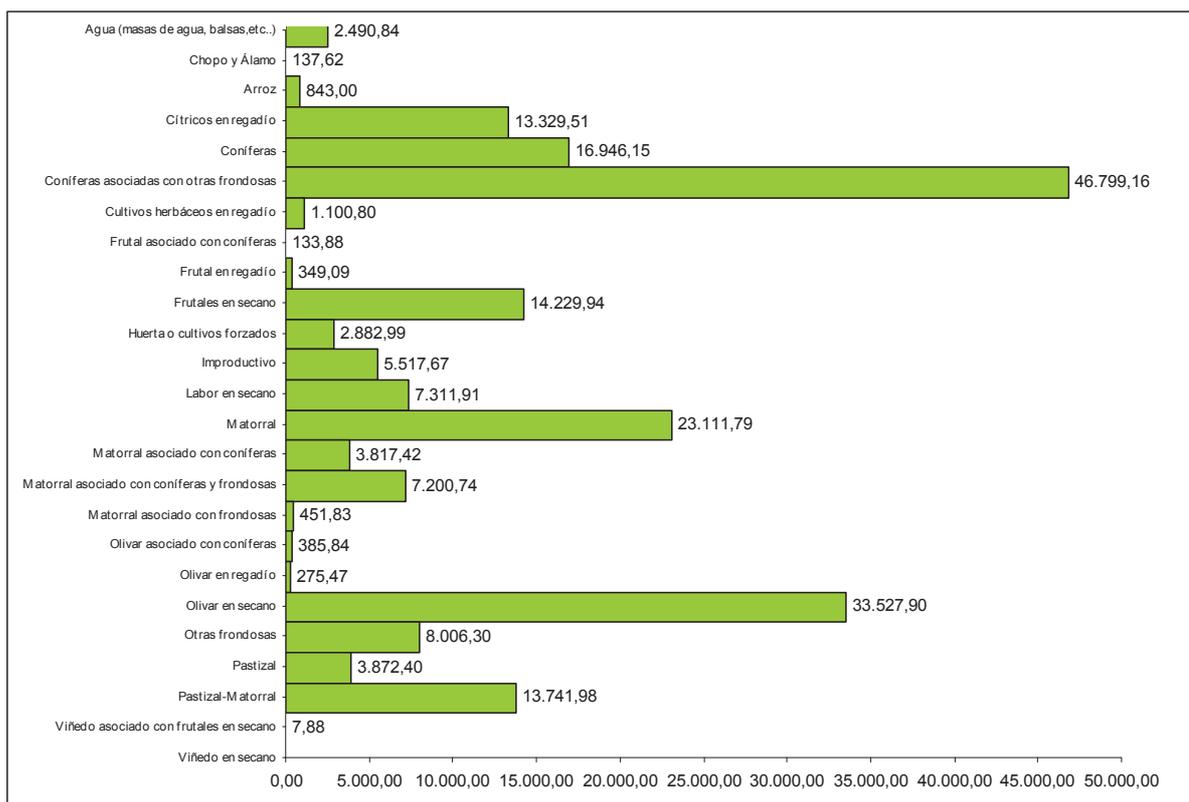
Sources: General Social Security Treasury
Idescat – Catalonia Statistics Institute
Statistic Portal of Valencian Government
Aragonese Statistical Institute

Land uses by municipalities in hectares (year 2010)															
	Alcanar	Benicarló	Becette	Càlig	Canet lo Roig	C. Cebres	Cervera	Freginals	Galera, la	Godall	Herbès	Jana, la	Mas Barberans	Morella	
Water (water bodies, rafts etc.)	10,38	114,17	88,45	62,41	29,65		151,89		7,64		4,63		32,27	0,55	
Aspen and poplar			5,08												
Rice															
Irrigated citrus fruits	1.529,00	801,9		250,17			11,49	83,56	554,5	261,23					
Conifers	135,38	12,42	3.327,86				1.309,12							528,39	
Conifers associated with other leafy trees	306,47		4.621,67		541,58	1.874,07		143,86		95,47	2.213,32	0,16	356,42	13.223,87	
Irrigated arable crops	31,59	688,24		6,78				1,7	52,12	20,35				0,15	
Fruit trees associated with conifers			16,74				117,14								
Irrigated fruit trees															
Rainfed fruit trees	150,2	1.180,13	226,35	2.121,93	91,58	3,34	3.108,39	101,83	23,86	395,26	30,12	65,18	16,95	64,77	
Vegetable garden or forced cultivation	104,61	1.045,90	140,81	10,71	0,35		12,85	12,28		0,12		5,08	42,76	41,21	
Unproductive	434,25	592,93	32,28	38,14	22,05	1,84		48,5	65,43	31,78	7,45	34,34	224,1	301,86	
Rainfed workload	1,2	10,28	96,64	1,76	291,38	31,78	22,2	50,02	4,36	77,8	132,4	271,47	47,08	2.752,16	
Scrubland	712,25	265,39	324,83	161,2	1.634,84	286,13	3.572,19	395,21	118,54	846,76	21,44	160,68	547,17	1.666,82	
Scrubland associated with conifers	342,9		161,9		3,98		65,36						1.040,78	49,87	
Scrubland associated with conifers and leafy trees	147,85		479,59					138,31		143,55	6,27		1.045,10	2.705,50	
Scrubland associated with leafy trees										85,45				101,12	
Olive grove associated with conifers	2,83				0,08		323,9						14,79		
Irrigated olive grove	6,36	7,02					5,49	120,85		18,25			0,2		
Rainfed olive grove	756,73	90,44	69,88	90,25	4.114,48		623,71	686,67	1.681,76	1.341,19		1.363,29	3.954,95		
Other leafy trees								11,29					78,1	7.717,31	
Grassland	11,5		17,86	1,3	53,11	35,29	11,02	19,71	35,09	27,98	19,12	5,37	11,68	2.103,79	
Grassland-Scrubland	2,05		76,22		88,75	842,94	0,24	25,09	0,24		277,81	13,65	47,71	10.037,06	
Vineyard associated with rainfed fruit trees															
Rainfed vineyard														3,51	
TOTAL SURFACE	4.685,54	4.788,82	9.686,15	2.744,63	6.871,82	3.075,40	9.329,26	1.738,57	2.742,67	3.399,12	2.715,78	1.951,49	7.940,33	41.387,47	
Penarroya		Poble Benifassà	Rosell	S. Rafael del Río	S. Carles Replita	Sant Jordi	Santa Bàrbara	Sénia, la	Traiguera	Ulldoona	Valderrubres	Vallibona	Vinaròs	TOTAL	
Water (water bodies, rafts etc.)		63,35	20,05	24,8	1.227,94	75,31	8,24	8,87	80,71	49,44	61,47	34,6	243,75	2.490,84	
Aspen and poplar										5,38	127,16			137,62	
Rice					843									843,00	
Irrigated citrus fruits				502,78		988,24	1.160,72		491,62	672,94			5.951,25	13.329,51	
Conifers	1.153,57	2.710,05	54,64		12,45	32,8		3.362,07	20,72	5,26	3.761,40		16.946,15		
Conifers associated with other leafy trees	5.235,79	4.553,18	122,88		0,03		0,31	1.744,71		688,28	3.152,58	7.910,77	13,9	46.799,16	
Irrigated arable crops	2,54			1,38	7,6		25,87			85,06	16,73		180,69	1.100,80	
Fruit trees associated with conifers														133,88	
Irrigated fruit trees				2,05			12,36		7,45	178,35	15,66		1,88	349,09	
Rainfed fruit trees	164,36	417,79	310,09	141	6,61	672,4	175,62	126,38	914,24	470,13	1.947,96	3,98	1.299,49	14.229,94	
Vegetable garden or forced cultivation				55,96	100,95	3,28	1,1	200,08	34,54	474,42	238,75		302,32	2.882,99	
Unproductive	80,71	41,94	50,54	32,73	1.326,64	209,44	157,21	244,38	128,24	341,04	107,9	4,29	957,68	5.517,67	
Rainfed workload	616,21	128,03	17,61	87,13	32		66,86	12,65	113,17	1.064,72	1.357,85	25,15	25,15	7.311,91	
Scrubland	29,56	2.067,52	3.754,43	88,47	667,43	536,31	65,78	1.325,76	1.018,98	1.948,62	214,77	508,26	172,45	23.111,79	
Scrubland associated with conifers	2,54		17,3					279,48	28,57	736,5	55,9			3.817,42	
Scrubland associated with conifers and leafy trees	317,7		1,19					807,37		243,66	144,03	35,8		7.200,74	
Scrubland associated with leafy trees	49,91		53,47							11,95	83,99			451,83	
Olive grove associated with conifers			5,55						9,23			29,46		385,84	
Irrigated olive grove							41,43	3,06					51,99	275,47	
Rainfed olive grove	177,84		2.726,32	1.147,25	521,88	1.008,84	1.067,86	2.584,14	3.056,21	5.458,82	708,7	57,19	239,5	33.527,90	
Other leafy trees			62,02	0,05	44,49		6,17	29,43					8.006,30		
Grassland	92,52	209,25	176,47	21,19	7,13	20,03	17,68	90,98	25,67	235,21	135,7	422,98	64,77	3.872,40	
Grassland-Scrubland	407,12	1285,31	83,01	11,71		46,86	39,87	57,25	54,53	30,04	153,14	138,6	23,02	13.741,98	
Vineyard associated with rainfed fruit trees														7,88	
Rainfed vineyard	5,36										120,87			129,74	
TOTAL SURFACE	8.335,75	13.611,03	7.505,39	2.116,49	4.836,27	3.646,34	2.840,93	10.873,53	5.990,05	12.702,86	12.412,45	9.145,94	9.527,84	206.601,82	

Source: INE

There are many different types of land uses within the *Territorio Sénia*. A large part of this territory (60%) is covered by conifers, leafy trees, scrub and grassland, specially in the inland mountain areas. Moreover, the 36% of the territory is covered by crops and the other 4% are unproductive areas or water bodies. Regarding crops, the most important are rainfed crops as they represent the 75%. The olive grove is the principal growing (the 99% are rainfed crops) which represents nearly half of cultivated soil. Rainfed fruit trees and irrigated citrus fruits are next in importance..

Graphic of land uses in *Territorio Sénia* (2010)



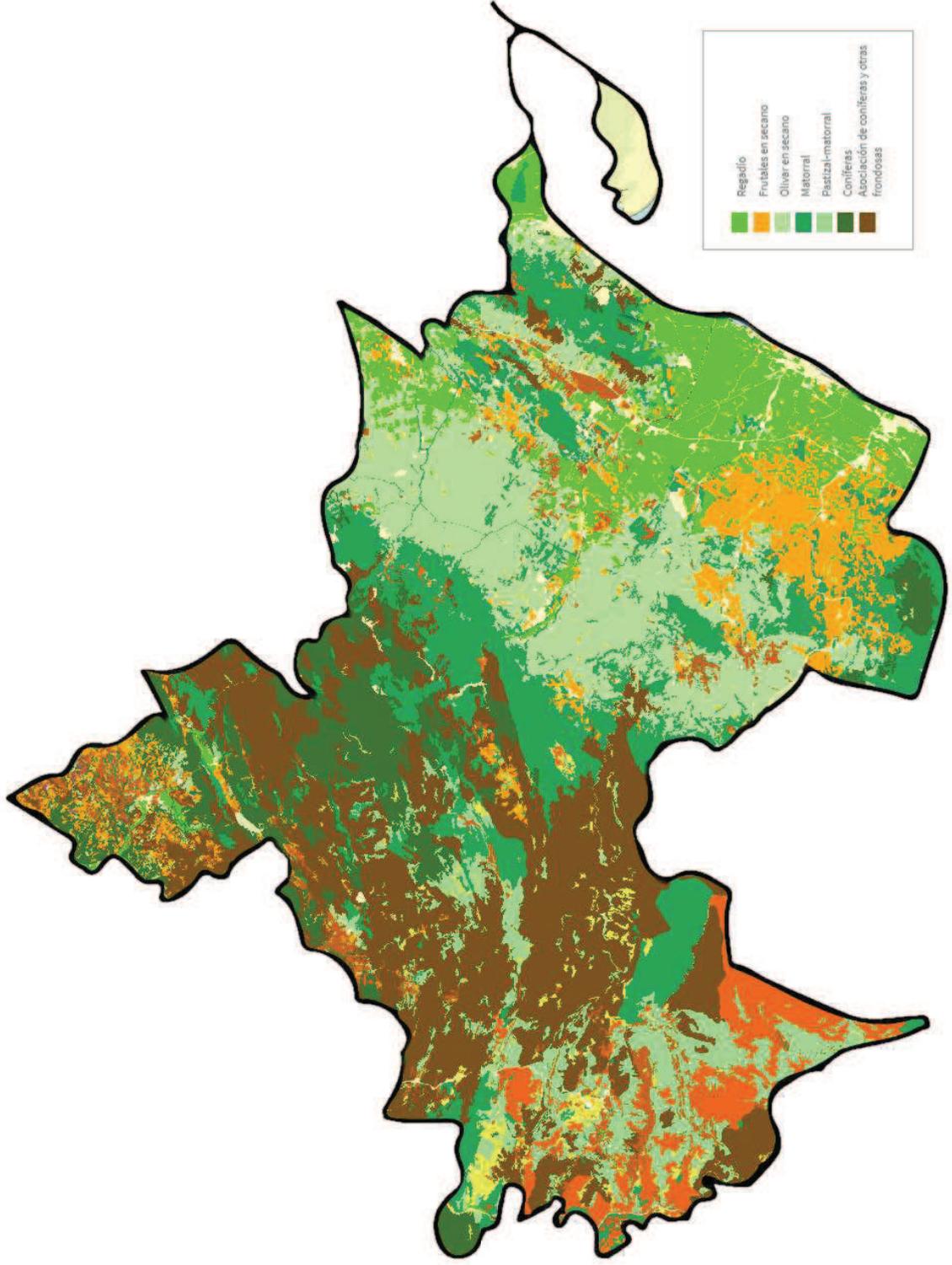
Source: INE

Looking at the map of land uses, three clearly differentiated areas within the *Territorio Sénia* can be seen.

- 1) Inland area where conifers, leafy trees and grass predominate.
- 2) Intermediate area where rainfed olive grove and fruit trees predominate.
- 3) Coastal area with irrigated crops.

This diversity of land uses together with the coexistence of agriculture, livestock, forestry and fishing in the same space make the *Territorio Sénia* an area with a great agro-ecological value that creates interesting opportunities to stimulate local trade with quality goods that protect environment as well.

Map of land uses in Territorio Sénia



Livestock farms in Territorio Sènia

Municipality	Cattle		Sheep		Goat		Horse		Pig		Poultry		Does		Beehives	
	Number of farms	Number of animals														
Alcanar	6	503	3	1.274	2	20	1	1	8	5.824	13	107.238	1	350	2	55
Becèite			7	821	6	43	9	16	4	3.300	7	136.602	2	421	2	16
Benicarló			2	431			1	1	3	3.560	13	170.065	5	10		
Càlig			3	431	4	675	1	12	3	2.029	8	168.506	4	1.860	1	244
Canet lo Roig			2	317	2	20			3		10	222.003	1	440	1	55
Castell de Cabres	4	178	2	760	1	114	3	12	2	191	4	40.002	2	342	2	625
Cervera del Maestre	1	157	2	310	1	21			1	1.000	1	630				
Freginals			1	967	1	21	1	3	9	12.230	7	140.200	3	750		
Galera , La			5	248	5	52	5	26	5	5.939	5	194.000	1	1.300	1	20
Godall	1	17	1	47			4		4	1.945	4	46.000				
Herbès	1	20	5	248	5	502	5	48	7	13.613	9	192.900	3	1.270		
Jana , la	3	175	79	18.618	27	502	11	11	42	42.192	8	92.203	2	930	1	15
Mas de Barberans	87	5.512	14	4.001	2	167	1	1	27	33.213	19	17.196	14	2.581	8	573
Morella	5	238	1	100			2	17	20	27.358	7	45.023	4	2.881	1	3
Peñarroya de Tastavins	3	81	5	838	4	47	2	2	3	3.870	15	436.008	6	4.330		
Pobla de Benifassà , la	3	81	1	285	2	37			3		7	105.015				
Rosell	3	81	1	15			1	3	3	1.842	3	20.024	3	552		
San Rafael del Río			1	400	1	10	2	9	5	9.150	3	38.500				
Sant Carles de la Ràpita	1	30	2	263	4	349	1	17	2	7.058	5	63.000				
Sant Jordi/San Jorge	1	9	2	256	1	8	1	1	9	16.728	15	375.700	3	1.445	1	8
Santa Bàrbara	1	3	11	3.679	6	207	3	5	4	4.640	19	399.504	5	4.174	3	1.470
Sènia , La	3	88	13	4.722	2	7	3	12	30	51.676	23	347.966	4	886	2	740
Traiguera	12	1.907	1	355	1	114	3	3	28	34.946	7	121.024	18	11.430	2	
Ulldecona	4	151	9	2.123	3	34			1	1.750	29	498.465	1	750	3	210
Vaiñalons	2	751	171	41.261	75	2.430	45	183	8	13.250	228	3.870.536	84	36.556	26	3.979
TOTAL	138	10.072	171	41.261	75	2.430	45	183	232	302.544	228	3.870.536	84	36.556	26	3.979

Source: INE

Apart from agricultural activity, livestock sector is important in the territory as well. This activity can be differentiated in extensive farming (cattle and sheep), which is mostly set in mountain areas, and intensive farming (pig and poultry), which is spread through the territory.

Extensive farming has more than 10.000 heads of cattle and almost 44.000 heads of sheep that bring innumerable benefits to the territory.

- Production of high-quality food (cheese, sausages, quality meats, etc).
- Maintenance of valuable ecosystems.
- Space-saving.
- Increase of organic matter and conservation of vegetation and ground coverage of poorest soils.
- It serves to buffer the impacts of climate change.
- Livestock's browse is an effective weapon against the spreading of bushes and fires.
- Maintaining the population and the social fabric in rural areas.
- Other economic local sectors arise from its activities: food-processing industry, handicraft, tourism and catering.
- Conservation of landscapes and ecosystems whose biodiversity depends on grazing.
- It is one of the few human productive economic activities that is truly sustainable.
- The management of livestock is the most ethical way as animals graze in a relative freedom in open-air, respecting their rate of growth and their own living conditions.
- Moreover, it produces compost to the crops in the area.

With regards to intensive farming, the territory has 232 pig farms with a total sum of more than 300.000 heads and 228 poultry farms with more than 4 million of animals. It has a uniform territorial distribution, which contributes buffering the environmental impacts and supplies compost to different crops within the territory.

Moreover, there are also 4000 beehives that contribute to pollination. Agriculture in the area receives lots of benefits from bees.

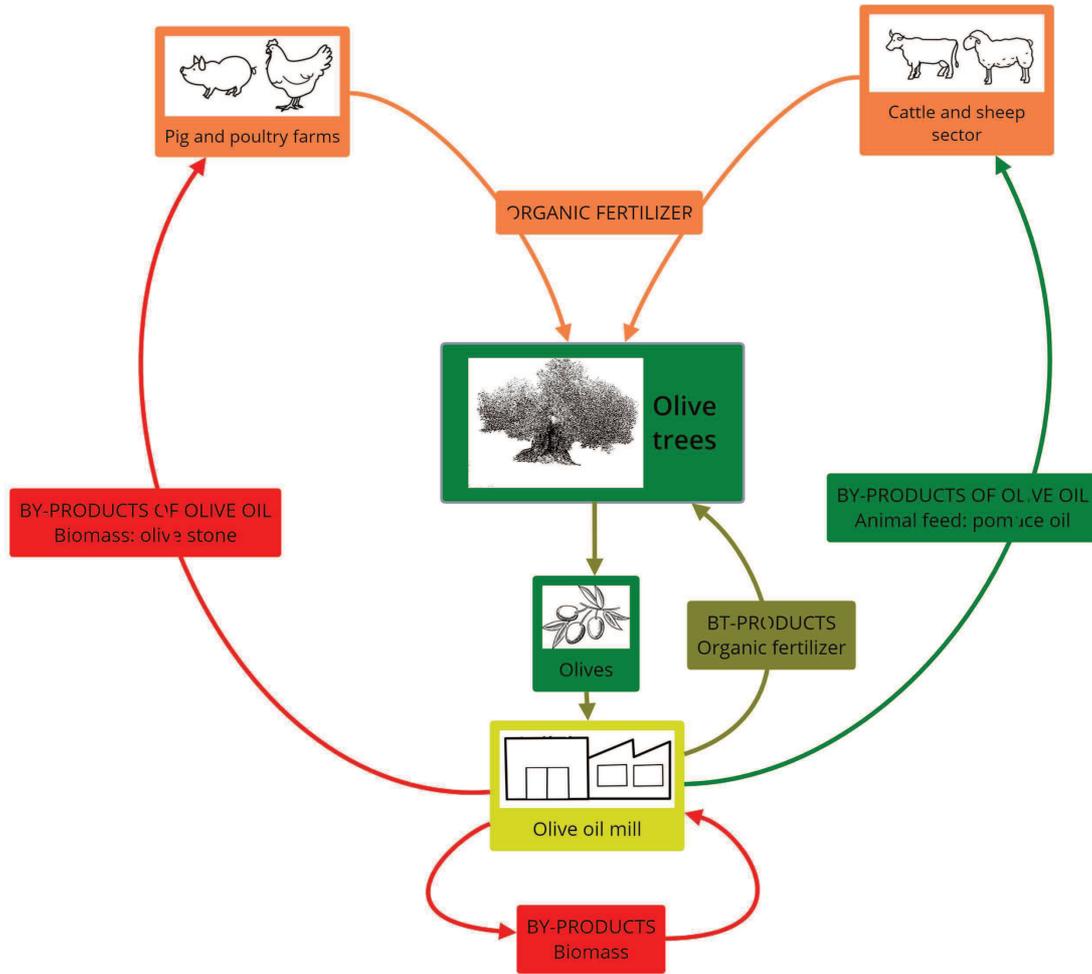
Both agricultural and livestock activity in *Territorio Sénia* maintain a balance and are closely related. Olive groves need other activities from the primary sector at the same time it favours them. Likewise, pig and poultry farms as well as cattle and sheep sector in the territory supply organic fertilizers to olive groves. The olives are transported to oil mills in order to produce olive oil, which creates subproducts that are difficult to process, both economically and environmentally.

Within the *Territorio Sénia*, these subproducts are reused in the majority of cases with the following economic and environmental benefit:

1. The olive stone is an excellent fuel used as a biomass resource for both the operating of oil mills (heating, hot water) and pig and poultry farms. The use of these kind of biomass as renewable energy allows economic savings and has advantages for the environment that other fuels are not capable of guarantee.
2. Leaves and the remains of olives during the milling process are also used as organic fertilizers to the own olive grove.
3. The remains of the milling process (pomace oil) are sometimes used as a food input in cattle and sheep sectors, specially during the winter when grassland is scanty.

Therefore, it is a sustainable system in both economic and environmental levels.

Interrelation between different activities and economic sectors



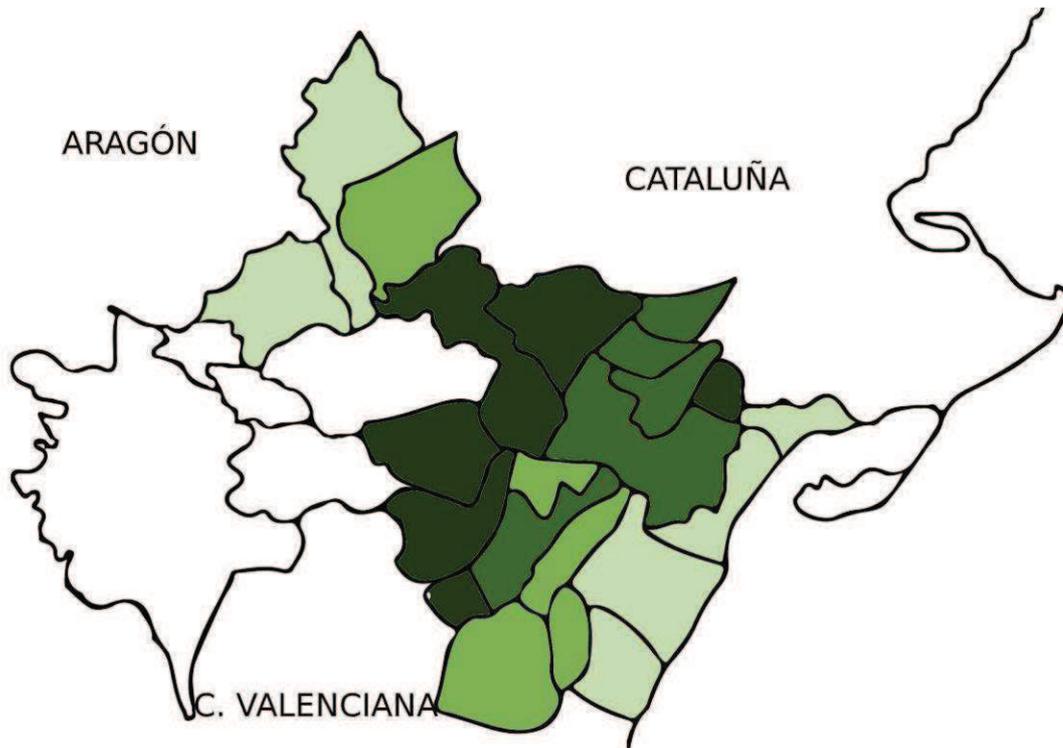
Importance of the olive growing in the *Territorio Sènia*

As *Columela* described in his work “De re rustica”, the olive tree is “the very first of all trees”. According to him, among all trees from around the world, the principal was the olive tree and two thousand years later things have not changed all that much. Nowadays, even more than in ancient times, thousands of people’s tables spread across the world are scented by the olive oil.

Within the *Territorio Sènia*, approximately 30.000 hectares are dedicated to the olive growing. It represents a high number when taking into consideration that there are practically no olive trees in five mountain municipalities. The olive groves cover the 14.5% of the total surface in the territory while they only represent approximately the 4% in Spain, Catalonia and Valencian Community and the 2% in Aragon. With regards to the cultivated area, the olive groves in the *Territorio Sènia* represent the 56%, being even higher in some municipalities such as *Canet lo Roig*, *La Jana*, *Mas de Barberans* and *La Sènia*, where represent around the 90% of their crops. The plantation density in the territory is about 75 olive trees per hectare.

% Olive growing surface in relation to cultivated area and total surface		
MUNICIPALITIES	% Olive growing surface/cultivated area	%Olive growing surface/total
ALCANAR	18%	6%
BECEITE / BESEIT	28%	2%
BENICARLÓ	11%	8%
CÀLIG	30%	24%
CANET LO ROIG	93%	51%
CASTELL DE CABRES	0%	0%
CERVERA	41%	12%
FREGINALS	75%	21%
GALERA, LA	64%	45%
GODALL	67%	34%
HERBÉS	0%	0%
JANA, LA	87%	59%
MAS DE BARBERANS	87%	41%
MORELLA	0%	0%
PEÑARROYA DE TASTAVINS	5%	1%
POBLA BENIFASSÀ	0%	0%
ROSSELL	84%	30%
SAN RAFAEL DEL RÍO	44%	36%
SANT JORDI	31%	25%
SANT CARLES RÀPITA	20%	5%
SANTA BÀRBARA	55%	35%
SÈNIA, LA	96%	19%
TRAIGUERA	65%	44%
ULLDECONA	67%	31%
VALDERROBRES	15%	5%
VALLIBONA	0%	0%
VINARÒS	5%	4%

Sources: Idescat – Catalonia Statistics Institute
 Statistic Portal of Valencian Government
 Aragonese Statistical Institute



% Olive growing surface/cultivated area	Municipalities
+ 75%	<i>Canet lo Roig, Freginals, la Jana, Mas de Barberans, Rossell, la Sénia</i>
50% - 75%	<i>La Galera, Godall, Santa Bàrbara, Traiguera, Ulldcona</i>
25% - 75%	<i>Beceite, Càlig, Cervera, San Rafael del Río, Sant Jordi</i>
5% - 25%	<i>Alcanar, Benicarló, Peñarroya de Tastavins, Sant Carles de la Ràpita, Valderrobres, Vinaròs</i>
0%	<i>Castell de Cabres, Herbés, la Pobla de Benifassà, Morella, Vallibona</i>

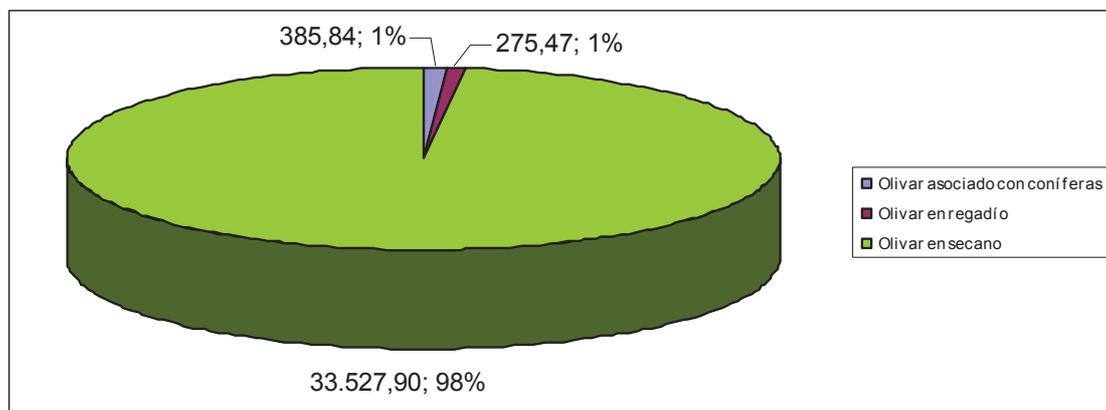
As it can be seen in the map, the olive growing is concentrated in intermediate plains of the central area of the territory. Most of the olive trees in this area are grown without irrigation, only few estates have irrigation supports. Therefore, plantations were totally adapted to the climate and agricultural conditions of the territory, some of them with many centennial varieties of olive trees.

From this, the olive growing is the most common crop and the economic base in most of the municipalities in the area, it is sometimes considered a monoculture. The olive growing is essential to local economies and a differentiating element of these lands at the same time. It constitutes a culinary, historic and landscape heritage that define its identity as a people.

However, despite the great percentage of olive groves, this crop is characterised by its low profitability due to both its low productive output and high relative costs. Over the last years, this has led to an increase in recession because of the lack of capital (economic and human) to renew exploitations and the existence of other crops with high economic expectations. Therefore, the challenge is to achieve that these traditional exploitations, which are small and sparsely spread through estates, become profitable.

There are five models of olive farms: traditional rainfed, traditional irrigated, intensive, high-density or super-intensive olive groves.

Within the *Territorio Sénia*, 33.527 hectares are dedicated to traditional rainfed olive groves (of the total 34.189 hectares with olive groves) so the irrigated system is almost inexistent in the area (1%).



The main characteristics of the different exploitation models are detailed in the table below:

Exploitation models	Traditional rainfed <i>T. Sénia</i>	Traditional rainfed	Traditional irrigated	Intensive	High-density	Super-intensive
Plantation framework	12 x 12 m without framework	10 x 10 m.	10 x 10 m.	6-7 x 5-6 m.	5-7 x 2-4 m.	4x 1,5 m.
Number of olive trees/hectares	50 - 70	80 - 100	80 - 100	200 - 400	400 - 700	+ 1.500
System of formation	1 foot/olive tree	2-3 feet/olive tree	1-2 feet/olive tree	High goblet-shape crest	Goblet-shape crest with two branches/central axis	Central axis

Source: Juan Fco. Hermoso (IRTA)

The olive grove within the *Territorio Sénia* can be included in the traditional rainfed exploitation model although it differs in some respects. The plantation framework is higher the traditional rainfed model and sometimes there is no existence of a regular plantation framework. The average number of olive trees per hectare is 60, which are formed by one foot and large tree crowns. Furthermore, there are properties with lower densities around 50 olive trees per hectare. Some examples are shown hereunder:

MUNICIPALITY	Surface (ha)	Number of olive trees	Olive trees/ha
<i>La Jana</i>	0,88	45	51
<i>Ulldecona</i>	0,24	13	54



The great concentration of ancient olive trees within the *Territorio Sénia*

In recent years, a great social movement in support of the defence and preservation of the monumental olive trees within the *Territorio Sénia* has been generated. It has been noted the existence of large size and old age trees in all the municipalities in the North of the Valencian Community and the South of Catalonia. In 2009, the *Mancomunidad Taula del Sénia* made an inventory in order to make known all the monumental or ancient olive trees in its territory. An olive tree has to measure at least 3.5 metres of perimeter of trunk at 1.3 metres from the ground in order to classify it as a monumental olive tree, that year 4.080 olive trees exceeded this figure. Moreover, this inventory is updated every year and nowadays the total sum of olive trees included in the inventory is 4.960. Therefore, the *Territorio Sénia* has become the first place in the world where the total number of existing ancient olive trees has been described accurately. Furthermore, this area owns the highest concentration of ancient olive trees from around the world and the largest specimens within the Iberian Peninsula and the Mediterranean can be found there.



Map of the number of ancient olive trees in each municipality

The highest concentration of ancient olive trees is found in the municipalities set along the old Roman Via Augusta. Likewise, *Ulldecona* (Catalonia) is the municipality with the highest number of specimens (1.372), followed by the Valencian municipalities of *Canet lo Roig* (1.131), *La Jana* (970) and *Traiguera* (589).

Over centuries, in spite of experiencing climate fluctuations, floods, frosts, abandonments, fires, wars and plunder during the last decades, these 4.960 monumental olive trees are the only natural living witnesses of our cultural dynamic landscape and the Mediterranean identity in its full complexity.

The importance of the olive oil production within the *Territorio Sénia*

The olive oil is considered a food and a condiment at the same time. It is also included in the so-called sacred trilogy together with wine and wheat. Moreover, in the Mediterranean diet, the olive oil is described as an emblematic product.

The *Territorio Sénia* is a large producer of the olive oil as 12 millions litres per year are produced, varying from one harvest to another. Likewise, the olive oil produced in the *Territorio Sénia* not only has a commercial purpose but also it is important its use for self-consumption. There are lots of farmers or people who are involved in other sectors but also own an estate with olive trees and collect their olives to bring them to an oil mill and be able to consume their own olive oil.

The most worrying fact is the quantity of *lampante* olive oil produced (78%) which has to be sold to large companies who control the market in order to be refined before being used. Finally, these companies are the ones who gain the profits.

		PRODUCTION AND QUALITIES IN LITRES(2014-2015) OF THE OIL MILLS IN <i>TERRITORIO SÉNIA</i>			
	OLIVE GROVE (ha)	Total	Extra	Virgin	<i>Lampante</i>
VALENCIAN COMMUNITY	13.414	4.081.751	81.160	437.277	3.563.314
CATALONIA	15.555	7.853.755	709.088	1.378.342	5.766.325
ARAGÓN	1.089	36.800	26.800	-	10.000
TOTAL	30.058	11.972.306	817.048	1.815.619	9.339.639

Source: data provided by the oil mills in the *Territorio Sénia*

On the basis of the above figures, the following logical question is raised: why is so many *lampante* olive oil produced in this area? It is mainly caused by the collection process which is mostly made with machines that prick the olives when picking it up from the ground. Therefore, these are bad practices that should disappear and be replaced by necessary improvements in order to produce high quality olive oils.

In spite the high percentage of *lampante* olive oil, the *Territorio Sénia* is placing on the increase of the quality. Nowadays, three Designations of Origin of the olive oil exist, each one in a different autonomous community:

- Valencian Community: D.O. *Comunidad Valenciana: farga, morruda, sevillenca.*
- Catalonia: D.O. *Baix Ebre – Montsià: farga, morruda, sevillenca.*
- Aragon: D.O. *Bajo Aragón: empeltre.*

Until the beginning of the 20th century, there were a great number of small familiar oil mills in each municipality. These small oil mills started to disappear and olive-growing cooperatives were created. Nowadays, there is almost one oil mill in the majority of the municipalities. Moreover, there are cooperatives with a great number of members, some of them of second-degree which market the product in their different qualities. In addition to it, there also exist different societies (SAT or companies) with private oil mills. Overall, there are 22 oil mills with very different features and productions, with a total sum of 4.300 members.

Guarantee mark *ACEITE FARGA MILENARIA*

During the nine years of partnership between the *Mancomunidad Taula del Sénia* and the oil mills through the *Asociación Territorio Sénia*, 26.000 litres of certified olive oil have been produced, exclusively from ancient olive trees.

In 2015, the *Mancomunidad Taula del Sénia* registered a Guarantee Mark known as *ACEITE FARGA MILENARIA*. The regulations governing use of the Guarantee Mark were approved by the Ministry of Agriculture, Food and Environment on 25 March 2015.

The Guarantee Mark *ACEITE FARGA MILENARIA* is the sign that certifies the quality and the origin of the virgin extra olive oils derived exclusively from the fruits (olives) of the species *Olea europaea* L. 'Farga' from not transplanted olive trees which exceed the 3.5 metres of perimeter of trunk at 1.3 from the ground and have therefore been included in the Inventory of ancient olive trees in the *Territorio Sénia* with their identification number, geographic reference and other data. The regulations governing use establishes the guidelines to be followed during the whole process: collection, production, storage, packaging and presentation of the oil. All this process is audited by a food certification company.



Collection of olives to produce the certified olive oil known as *ACEITE FARGA MILENARIA*

All the olive oils protected by the Guarantee Mark *ACEITE FARGA MILENARIA* have to be of the virgin extra category. Moreover, they must have a number of certified features by a laboratory and official tasting panels recognised by the International Olive Council. The Guarantee Mark is managed by a joint commission of members of the *Mancomunidad Taula del Sénia* and the *Asociación Territorio Sénia*.

Thus, the result is a high quality olive oil with a medium-high intensity green fruity, a balance between sweet and piquant in mouth, a mild touch of bitter and low astringency. Furthermore, secondary light aromas can be perceived which are a reminder of freshly cut grass, with nuances of almonds and green nuts.

GUARANTEE MARK RESULTS		
	2016	2017
COLLECTED ANCIENT OLIVE TREES	460	824
KG OF OLIVES	19.659	38.680
AVERAGE KG PER OLIVE TREE	42,7	46,9
KG OF OLIVE OIL	3.250	7.259
EFFICIENCY %	16,50	18,77
LITRES OF OLIVE OIL	3.542	7.912

Regarding the last harvest in 2017, it is worth mentioning that in spite of drought problems, it has been a production of 7.912 litres of certified olive oil and 12 brands have produced olive oil within the Guarantee Mark *ACEITE FARGA MILENARIA*.



Brands included in the Guarantee Mark *ACEITE FARGA MILENARIA*

Livelihoods and resilience

The *Territorio Sénia* is located in a frontier where three autonomous communities are united. However, they have preserved their own identity and worked together on issues

that concern their people. Besides, they have been able to put aside conflictive issues or disputes due to the recent events in the political, social and economic context.

The project on the ancient olive trees is a clear example of this joint work in order to preserve the agricultural, historic and cultural unique heritage. From this, it has overcome impacts, absorbed pressures and, finally, changed and become stronger itself.

The Agricultural System of the ancient olive trees is the result of the farmers' work that have cultivated and taken care of these trees throughout generations. In the last decades of the 20th century, the survival of these trees was endangered due to their low efficiency and the pressures exerted by traders in ancient olive trees. However, at the same time, the plunder carried out by these traders made the local community aware and the heritage importance of these trees began to be valued. Therefore, the plunder of the ancient olive trees, which is a very negative fact, led to awareness and the project on the ancient olive trees by the *Mancomunidad Taula del Sénia* was originated.

The adaptive capacity and an integral approach of the project are essential to ensure the survival of the ancient olive trees in the *Territorio Sénia*, which have continued to move forward on the rough pass of time in their life and death struggle.



This agricultural system counts on the willingness of the whole territory that is committed to its survival. Moreover, it has some characteristics that improve its adaptive and recovery capacity in relation to environment and climate change.

Exploitation models	Rainfed traditional	Irrigated traditional	Intensive	High-density	Super-intensive
Collection system	Vibrator / Manual	Vibrator of trunks	Vibrator with umbrella	Colossus / lateral	Harvester
Irrigation	-	1.500 m ³ /ha	2.000 m ³ /ha	2.500 m ³ /ha	3.500 m ³ /ha
Average production	2.000 kg/ha	4.000 kg/ha	6.500 kg/ha	8.000 kg/ha	9.500 kg/ha
Useful life of the olive grove			< 30 years	< 20 years	< 15 years
Costs €/kg olive oil	3,19	2,27	1,54	1,40	1,29

Source: Juan Fco. Hermoso, IRTA

The olive grove in *Territorio Sénia* is a traditional rainfed crop with varieties totally adapted to climate conditions in the area, so it can survive without irrigation. Traditional irrigated olive groves need large irrigation systems, specially super-intensive olive groves as they require 3.500 m³ of water per hectare approximately.

It is true that productivity increases considerably in irrigated crops, but ecological costs (erosion, salinization, pollution, overexploitation of aquifers,...) derived from these productive models make them unsustainable for the future.

Therefore, traditional rainfed crop is the most natural olive grove as it is the only one that take advantage of environmental conditions of nature in the place where harvest is obtained. Moreover, it does not compromise the future to next generations since resources are not overexploited.

It is also worth mentioning that useful life of traditional olive groves is limitless as evidenced by the specimens of monumental olive trees that already exist in the *Territorio Sénia*. This non-renewal of trees from time to time brings both environmental and economic benefits. The rest of production models have a short useful life of the olive trees, so trees needs to be renewed between the 15 and 30 years old, which means heavy economic investments in exploitations and a large energy consumption making CO₂ emissions.

The aim is that olive groves do not generate more pollution during production than the CO₂ they can fix. A sustainable system can be achieved by designing an integrated production in traditional rainfed olive groves including energy efficiency methods in all production stages.

Sustainability and future survival

The creation of the *Mancomunidad Taula del Sénia* in 2016 and the *Asociación Territorio Sénia* (formed as 50% by the own *Mancomunidad* and as 50% by economic and social sectors of the territory) in 2017 was a crucial turning point for preserving and putting the ancient olive trees and their environment on value.

New aims on environmental, social and economic recovery of the area have been established. The objective is to translate the ancient olive trees into an engine of development of the territory by creating new hopes for the future, preventing depopulation and deterioration and loss of the natural resources that the territory has to offer.

Moreover, local community and different collaborative public institutions (*Mancomunidad Taula del Sénia*, councils, provincial councils, autonomous institutions and central government) have been involved in the capacity of the territory of being a driving force in revitalization.

Likewise, new products and a broad range of activities and services have been created:

- Certified olive oil *ACEITE FARGA MILENARIA*.
- Single-varieties olive oils and controlled coupages.
- Natural museums and areas of ancient olive trees.
- Itineraries to do on foot or by bicycle in order to admire the sea of olive trees and the ancient olive trees.
- Collaborations with the restaurants of the territory and best chefs of Spain.
- Touristic products that include a visit to the olive trees, gastronomy and other heritage resources of the territory.
- Civic and cultural activities: European Days dedicated to the natural heritage, activities in schools, festivities of the olive tree and their oil.

The results obtained are important and are generating resources that contributes to self-financing and the consolidation of the project on the ancient olive trees. Economic returns are based on a unique resource. In other words, this resource is the presence of a high concentration of ancient olive trees and the extraordinary quality of their resultant products.



Overall, the recovery and the put on value of the ancient olive trees contribute to a sense of identity, cohesion of all involved institutions, agents and citizens. Therefore, social capital is empowered, which is essential in every process of local sustainable development.

The System Ancient Olive Trees *Territorio Sénia* has been able to conserve its sustainability based on a difficult balance between nature, conservation and respect for the environment as well as the exploitation of resources in such natural environment.

Agro-biodiversity



II.2.2. Agro-biodiversity

TRADITIONAL VARIETIES OF OLIVE TREES

Nowadays, the enormous range of varieties of olive trees are the results of the dedicated efforts and the observation that our ancestors have made for hundreds and thousands of years in order to find new phenotypes to improve the olive growing. All existent varieties of olive tree are considered an important heritage of genetic biodiversity that takes part in human history and its culture and environment as well.

The varieties of olive tree are very ancient and native. Probably, they were originated when the first farmers selected the variety of wild olive trees in a certain area. By selecting this variety they looked for the specimens with the largest fruit, a high content in oleic acid, frost tolerance, wind resistance,... Therefore, it is said that every variety is unique and adapted to weather conditions for each specific area.

The municipalities members of the *Mancomunidad Taula del Sénia* have an olive growing with some particularities that have excluded them from the “new olive growing” until recently. This new olive growing started in 1980 and involved the globalisation of the olive growing around the world.

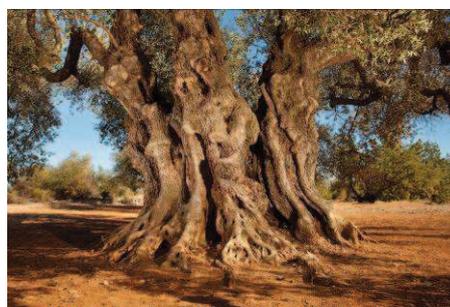
In the area of the *Mancomunidad Taula del Sénia* four major native varieties can be found, which cover large part of the area in the olive growing regions. The most important varieties are: *Farga*, *Morruda*, *Sevillenca* and *Empeltre*. It is also worth mentioning other minority varieties that are also cultivated in the whole territory and are very important for their wealth of local and native diversity such as *Canetera*, *Llumeta*, *Cuquello* and *Marfil*.

Nowadays, these particularities allow the differentiation of their production regarding other territories, which means a complement to the traditional olive activity that already exists. The initiative launched by the *Mancomunidad Taula del Sénia* to catalogue, recover and commercialize the oil of the monumental olive trees represents the first step that demonstrates their viability.

‘*Farga*’

This variety has an ancient origin which has been confirmed by studies performed with the population of monumental olive trees in *Territorio Sénia*. It is thought that it already existed in Roman and Arabic times. Although its origin is uncertain, some theories assume that it comes from the North of *Castellón* or the South of *Tarragona* while others support that a monk called “Fargues” or “Farga” brought it from Valencia or Murcia, giving its name to this variety.

Moreover, the tree is vigorous and perfectly adapted to our climate and soil. It responds well to radical pruning which enables its recovery after severe climate accidents (frosts or drought) or years of neglect, so it could have facilitated its longevity. It is also a productive variety but alternating as well as it is rustic and enters into production slowly.



Olive tree of the variety ‘*Farga*’

With regards to its olive, it is small size, with early picking-up, elongated, a bit sickle and turns black on maturity. It presents the peculiarity of being male-sterile (absence of pollen production) so it needs other fertile varieties to curdle the fruit.

However, this variety has entered a phase of regression as due to its irregular production (with a maximum in alternating years) and the great dimension of specimens that difficult the collection, so it has been replaced by others, more productive and easier to collect.



Olive fruit from the variety 'Farga'

'Morruda'

200 years ago, this variety was spread through the regions in the South of *Tarragona* and the North of *Castellón*, which correspond to its distribution area. It is believed that its fast and dominative expansion within the territory resulted from the late maturation of its olive, being more resistant to the attacks of the olive fruit fly. Therefore, it complements the early harvest of the *Farga* olives.

The fruit is rounded, bigger and has a terminal apex in the shape of a nipple or a snout, giving its name. It becomes red on maturity and is susceptible to drought and cold. Its productivity is higher than *Farga* and its growing have been increasing progressively, replacing the *Farga*.



Olive fruits from the variety 'Morruda'

'Sevillenca'

This variety is also known as "Serrana de Espadán". It is thought that it came from the interior regions of *Castellón*, the *Alto Palancia*, and spread outside the area of origin through the North of *Castellón* and the South of *Tarragona*, where has been consolidated as an important crop and covers a large area.

The tree is vigorous but not particularly productive. It is also susceptible to drought and fungal attack. Moreover, its fruit is oval, asymmetric, sharp apex without an apical nipple and becomes black or purple on maturity. It also appeared after the *Farga* but its crop has entered in regression in some areas in recent years.



Olive fruits from the variety 'Sevillenca'

'Empeltre'

It is a very ancient variety whose name comes from the grafting, which is the classic system of reproduction of this variety. It is also known as "Aragonesa" as it is widespread throughout Aragon and, to a lesser extent, in the North of *Castellón* and the South of *Tarragona*. It has a low rooting capacity, so propagation by grafts is mandatory. Trees are medium vigorous and tolerant to low temperatures. Its olives are harvested earlier and are considered ones of the most appreciated as black table olives.



Olive fruits from the variety '*Empeltre*'

Other traditional varieties

- *Cuquello*: it is a characteristic and exclusive variety from the municipality of *La Jana*.
- *Canetera*: it is named as the municipality of its origin, *Canet lo Roig*.
- *Llumeta*: it was originated in the North of *Castellón* and some isolated trees can be found in the South of *Tarragona* as well.
- *Marfil*: it is a variety of unknown origin. It was traditionally used to heal the wounds as its oil contains large quantities of polyphenols with antibacterial properties. The most characteristic and particular thing of this variety is its white or ivory colour on maturity, giving its name.
- *Mançanal*: it is a very ancient variety which is only known exclusively in the interior municipalities (*Herbés, Peñarroya, Beceite* and *Valderrobres*). It is a vigorous tree which is tolerant to frosts. All the three ancient olive trees in Peñarroya are of this variety.
- *Morona*: it has an unknown origin and its growing region consist of isolated trees throughout the territory.
- *Solà*: it also has an unknown origin, and its growing region includes exclusively the Catalan municipalities of the territory.
- *Valentins*: it appeared recently in the neighbourhood of *Els Valentins* in *Ulldecona*.
- *Plans*: it appeared at the same time as the previous variety and spread through some of the Catalan municipalities.
- *Del Doctor* or *Baix Rama*: some isolated trees were found in the Valencian territory.

In recent years, some new varieties from others regions of the Peninsula have been introduced and have been replacing local varieties gradually. The fact is that this new ones have a higher production and returns or simply facilitate the mechanization of the crops. Therefore, it is a threat to the survival of the native varieties and the ancient olive trees.

The study of DNA of the different varieties allows to define the possible similar relationships between each other. Results have shown that all varieties are quite different among them. However, it seems an evidence that the varieties *Farga* and *Cuquello* are closer than others, which suggest that the second one is a seed from the first one as they share at least one allele in every of the locus studied. Moreover, *Canetera* and *Llumet* also have a certain similarity with this group, even though these varieties are clearly differentiated morphologically. Something similar occurs between *Empeltre* and *Marfil* although the relative distance between them is important. The rest of the varieties are more unrelated than the other ones.

This suggests that a great genetic wealth exists within the population of the olive trees throughout the regions members of the *Mancomunidad Taula del Sénia*. Possibly, due to their history, each variety came to the region in different moments and from different origins. Therefore, this diversity can also be observed in terms of both the agronomic behaviour of the olive trees and the characteristics of the oil that every variety can produce.

An study of determination of the ancient olive trees genotype carried out by the Institute for Research and Technology in Food and Agriculture (IRTA) is attached.

ANCIENT OLIVE TREES

Inventory of the ancient olive trees

In response to concerns about the problem of the plunder of the ancient olive trees and the messages of alarm delivered by the local community who were worried for the sale of this natural, historic and cultural heritage that takes part of this territory, the *Mancomunidad Taula del Sénia* made an inventory of the ancient olive trees.

From this, the aim of this inventory was to make known the total number of the ancient olive trees within the *Territorio Sénia* in order to see the dimension of the extended tree and natural heritage. Therefore, it has been the first tool to develop conservation projects, management plans, actions and studies intended for maintain the great heritage of the ancient olive trees in a sustainable way for both the owners of the trees and the governments.

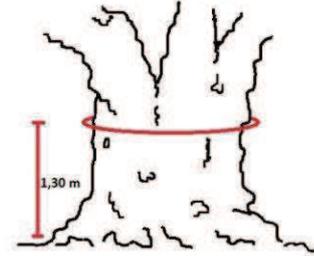


Ancient olive tree in *La Jana*

The criteria followed to include an olive tree in the inventory was that the trunk length had to measure at least 3.50 metres of perimeter at 1.30 metres from the ground. This criteria was used in the study "Prospecting of the monumental olive trees in *Andalucía*" carried out by *C. Muñoz, D. Barranco* and *L. Rallo*. They demonstrated that an olive tree with these dimensions is old enough to be considered a monumental olive tree.

Measurements and data taken from each olive tree included in the inventory:

- Identifying number: each olive tree in the inventory has been assigned a number.
- Location: name of the municipality and heading as well as polygon and plot.
- GPS location and height above sea level.
- Perimeter of the trunk at 1.30 metres from the ground (PAP): this data point sets the limit to include the tree in the inventory or not as it has to be equal to or greater than 3.5 metres.
- Minimum perimeter (Pm): this measure is taken in olive trees which branch before the 1.30 metres from the ground.
- Height of the minimum perimeter (Hpm): this measure indicates the height of the Pm.
- Perimeter of the secondary branches (PAP2).
- Perimeter of the base of the trunk (PAB): this measure is obtained by surrounding all the olive tree base at ground level.
- Height of the specimen (H).
- Maximum diameter of the treetop (DMC): it is the maximum distance from one the one side to the other of the treetop.
- Variety (Var).
- Observations: the no measurable characteristics of the olive tree are indicated, such as the crop conditions, the morphology of the specimen, abnormalities of the trunk, health conditions,...
- Photographies: each specimen in the inventory is photographed individually from different perspectives.



Tasks of cataloguing the ancient olive trees

The tasks of cataloguing the ancient olive trees in *Territorio Sénia* throughout these years has made these great quantity of historic trees better known in an accurate way. The total sum within the territory have been increasing for these years and have changed since the first total sum in 2009. Then, the first sum included 4.080 ancient olive trees while, nowadays, the sum have growth up to a total of 4.960 ancient olive trees.

	Municipalities	Ancient olive trees		Km ² area	Ancient olive trees/Km ²
		2009	2017		
1	<i>Alcanar</i>	8	10	47,10	0,21
2	<i>Benicarló</i>	26	27	47,86	0,56
3	<i>Càlig</i>	44	53	27,47	1,93
4	<i>Canet lo Roig</i>	1.118	1.131	68,67	16,47
5	<i>Cervera del Maestre</i>	58	69	93,24	0,74
6	<i>Freginals</i>	33	84	17,38	4,83
7	<i>Galera, La</i>	4	8	27,42	0,29
8	<i>Godall</i>	76	134	33,94	3,95
9	<i>Jana, La</i>	939	970	19,50	49,74
10	<i>Mas de Barberans</i>	14	18	79,30	0,23
11	<i>Peñarroya / Pena-roja de Tastavins</i>	3	3	83,28	0,04
12	<i>Rossell</i>	41	70	74,93	0,93
13	<i>San Rafael del Río</i>	-	2	21,10	0,09
14	<i>Sant Carles de la Ràpita</i>	6	5	53,23	0,09
15	<i>Sant Jordi / San Jorge</i>	-	153	36,00	4,25
16	<i>Santa Bàrbara</i>	8	38	28,35	1,34
17	<i>Sénia, La</i>	173	178	108,63	1,64
18	<i>Traiguera</i>	279	589	59,76	9,86
19	<i>Ulldecona</i>	1.237	1.372	126,81	10,82
20	<i>Valderrobres / Vall de Roures</i>	-	16	124,04	0,13
21	<i>Vallibona</i>	-	4	91,40	0,04
22	<i>Vinaròs</i>	13	26	95,46	0,27
	Total	4.080	4.960	1.364,87	3,63

On the one hand, from this total sum of ancient olive trees, the *Territorio Sénia* has become the first area in the world with such a detailed and accurate inventory of its trees. Moreover, it is the area with a highest known concentration of ancient olive trees from around the world.

On the other hand, in 2010 and thanks to the inventory, a more detailed analysis of the varieties of the ancient olive trees included in the inventory was carried out (*Ninot & Romero, 2011*). For this, 1150 samples were collected and genetic markers were analysed. Results showed that the dominant variety among the ancient olive trees is the *Farga*, which is found in the 96% of these trees. Some specimens from a totally unknown varieties were also found (Undetermined). Other specimens were included as *Helical* as they all have an identical morphologic characteristics (leaves wrapped helically), which suggests that it is an unknown local variety.

Variety	Number of ancient olive trees
<i>Farga</i>	4.640
<i>Morruda</i>	89
Undetermined	43
<i>Sevillenca</i>	13
Helical	12
<i>Canetera</i>	10
<i>Manzanal</i>	3
<i>Cuquello</i>	1
<i>Empeltre</i>	1
<i>Llumeta</i>	1
<i>Marón</i>	1

Dating of the ancient olive trees

The age of the olive trees is one of the most significant values of them which are considered as authentic monuments. Over the years, trees increase the dimensions of all their parts, specially the thickness of the trunk. For this reason, the oldest trees have larger dimensions than the youngest trees.

It has to be taken into consideration that the size of a tree depends on multiple environmental and genetic factors. The type of variety can condition the growth and the development of a tree throughout its life. Additionally, environmental conditions can also affect such as rainfall, heat stroke, temperatures as well as thickness and nature of the soils.

It is difficult to know the age of a tree by measuring the dimension of the trunk at first sight as all these factors that condition the growth have to be taken into account. Another factor that is a problem when determining the age of the olive trees, even by classic methods such as C14 dating, is the fact that the largest specimens, and the oldest in consequence, have an empty interior due to environmental factors as time passes. Furthermore, it was a common practice between farmers to remove the inner dead wood in order to reclaim trees and obtain wood for domestic needs.

From this, some studies based on dendrometric methodologies and estimates and equations have been used in order to determine the age accurately and figure the real volume of the trunk and its age out. Some olive trees of the territory have been dated by the Department of Engineering and Forest and Environmental Management of the Higher Technical School of Engineering of Mountains, Forests and Natural Environment of the Polytechnic University of Madrid.

Olive tree Number	Municipality	Year of planting	Age
1878	<i>Ulldecona</i>	314	1.704
2814	<i>Canet lo Roig</i>	527	1.491
2767	<i>Canet lo Roig</i>	569	1.449
0041	<i>Sant Jordi</i>	744	1.274
0117	<i>La Jana</i>	833	1.185
3841	<i>Traiguera</i>	971	1.047
1493	<i>Ulldecona</i>	1011	1.007
3715	<i>Godall</i>	1018	1.000



“Farga del Arión” ancient olive tree (*Ulldecona*), dated in 1.704 years old.

Leyes de protección de los olivos

For many centuries, most of these olive trees were uprooted gradually by their owners to obtain or sell their wood or just to replace them by younger trees. The abandoned trees’ owners could not obtain yields on the land so their last option was to sell the wood of these trees. It was an easy way to get money from uncultivated trees.

In the nineties of the twentieth century, the uprooting of these trees was accelerated and extended not only in the abandoned trees but also in the olive trees in full production. Large sums of money were offered to the owners of the olive trees to give them away, so they were sold as a decorative trees. Selling these trees became an easy and comfortable economic source to obtain benefits as the prices of the oil were low and the subsidies to maintain the crops were limited. Other times changes in dry farming with more economic profitability (citrus fruits, vegetable gardens...) were involved.

Likewise, in front of the plunder of the ancient olive trees for years, a type of official protection to preserve them is needed. There are many laws to support and ensure the conservation of the historic, cultural and architectural heritage, so there needs to be a similar one for these trees. The protection of these trees by the different competent administrations within the *Territorio Sénia* are poor and very limited as it is described below. Although it is improving nowadays, it is still insufficient.

Valencian Community

Nowadays, the Valencian Government contemplates the LAW 4/2006 of 19 May of the Tree Monumental Heritage of the Valencian Community. The aim of this law is to ensure the protection, preservation, dissemination, promotion, investigation and increase of the tree heritage in the Valencian Community.

Any tree species are declared protected generically without the need of an express resolution as long as they being equal to or greater than one or more these parameters: 350 years old, 30 metres of height, 6 metres of perimeter of trunk at 1.30

metres from the ground or 25 metres of maximum diameter of the treetop measured on the horizontal plane.

Recently, the Regulation has been published and the protection of olive trees has been expanded to all those that overcome the 3.5 metres of perimeter of trunk at 1.3 metres from the ground.

Catalonia

The protection laws of the monumental trees by the Government of Catalonia are very limited regarding the number of trees under protection. The preservation of the monumental trees is regulated by the Decree 214/1987 of 9 June and by the Decree 47/1988 of 11 February.

Among the trees listed as monumental by the Government of Catalonia, only 3 specimens of olive trees are included: “lo Parot” in *Horta de San Juan* and two olive trees in *Ulldecona*, the “Fargas del Arión” I and II.

Under the Degree 47/1988 of 11 February, within the Catalan territory of the *Territorio Sénia*, two municipalities have declared some olive trees as a local interest. Likewise, *Ulldecona* has 53 olive trees declared as a local interest while *Sant Carles de la Ràpita* has 23, being protected.

Nowadays, a Proposition of Protection Law have been presented to the Parliament of Catalonia in order to protect all monumental olive trees in Catalonia. It is still pending processing.

Aragon

By the law 15/2006, the mountains of Aragon are regulated in order to preserve the forest heritage. With the Resolution of 25 May 2009, the first catalogue of monumental olive trees was created. It includes 33 specimens, without any olive tree among them.



Plunder of the ancient olive trees

BENEFITS OF THE CONSERVATION OF THE TRADITIONAL OLIVE GROVE AND THE ANCIENT OLIVE TREES FOR BIODIVERSITY

Carbon sinks

Woody crops, as well as the other ones, are able to capture atmospheric carbon dioxide and store it in the form of organic matter. In contrast to annual crops, woody

crops have a greater capacity of storage, so carbon dioxide is longer bound in biomass. Therefore, they are sinks of this greenhouse gas. Moreover, traditional olive groves and, specially, the ancient olive trees can store a great quantity of carbon dioxide in their biomass, which play a leading role in the fight against climate change.

Biofuel

It is worth mentioning their capacity to produce biofuels (olive marc, olive stone), which are renewable energy resources that reduce emissions from fossil fuels. Therefore, it is a sustainable model of production in which industrial change and energy recovery create an integral cycle of uses that promote employment in rural area at the same time

Soil recovery

The recovery of the abandoned ancient olive trees has several environmental benefits. These trees are located in soils where no one has work for many years, so their recovery avoid their future extinction due to pests, lack or nutrients or loss of soil properties. Moreover, their recovery involves an increase in the capacity of carbon fixation by the olive trees and the soil. It must not be forgotten that, during this process, olive trees are brought back to life, which is positive for biodiversity as it is regenerated and conserved.

Fertilisation with organic fertilisers

Pig and poultry farms, as well as cattle and sheep sector in the territory bring organic fertilisers to olive groves.

No water consumption

Within the Territorio Sénia, the great majority of olive groves are rainfed traditional. The 99% of the olive groves are rainfed. These kind of cultures does not affect the water table so overexploitation of aquifers is not promoted and negative effects to the rest of the ecosystem are reduced. Irrigated olive groves needs great contribution of water input, specially super-intensive olive groves that require 3.500 m³ of water per hectare approximately.

Pest prevention

These traditional olive groves are part of the Mediterranean landscape with the presence of biodiversity reservoirs that conserve populations of natural enemies of pests. These environments are oak groves, ravines, vegetable margins, dry-stone buildings, Mediterranean forests, etc. Therefore, this system is self-regulated in front of pests, that have punctual effects under very favorable terms.

The significant presence of the avifauna acts as an ally of the farmer in pest prevention and reduce the negative effects of the olive fruit fly. The benefits are mutual and necessary as olive groves are a paltry to several species of birds: trushes, common starlings, warblers, rufous bush chat, serins, goldfinches, partridges.

Mammals, amphibians and reptiles that live within olive groves are harder to see than birds or insects. However, they are also important as they have a key role to achieve environmental balance within olive groves. Some of them, as urchins, lizards or toads are important because of the great quantity of insects they eat and their contribution to soil fertilisation. Others like snakes or weasels help to control voles and other rodents. Apart from these mentioned animals, bats are also important as they are able to eat up to 1.000 insects in two hours, as well as rabbits, hares and lizards. Therefore, all have their function and bring more benefits than damage.



Ancient olive tree and dry-stone buildings

Moreover, invertebrate species are also important in the balance of olive groves. A rich soil with a nourished soil fauna, both burrowers and decomposers (earthworms, digger insects, bacteria, fungi,...), contribute to the mitigation of damages caused by several pathogens. They are also important for their function as leaf-eating, pollination and predators of other arthropods.

The territory of the *Mancomunidad Taula del Sénia* is very extensive as it includes 207.000 hectares spread from the sea to inland mountains, which provide a great diversity of habitats and an extraordinary wealth of fauna and flora. A great part of this territory is protected: the 50% is included within the Natura 2000 Network, there are 3 Natural Parks and all Catalan municipalities are included within the *Terres de l'Ebre* Biosphere Reserve.

Furthermore, the Territorio Sénia is unique for its concentration of ancient olive trees and the existence of traditional varieties with a great genetic diversity.

PROTECTED AREAS

From the perspective of the agro-biodiversity of the *Territorio Sénia*, it is worth mentioning that within the 207.000 hectares which form part of it, the 64% of the surface (133.274 hectares) has any kind of protected status.

Natura 2000 Network

It is formed by two types of protection:

- SCI (Sites of Community Importance): sites hosting a priority natural habitat type or priority species at European Union level.
- SPAB (Special Protection Areas for Birds): sites to conserve wild bird species as far as the European Union is concerned.

The *Territorio Sénia* has 103.205 hectares within the *Natura 2000* Network (which is the 50% of the total area). The list below includes all the sites within the *Natura 2000* Network in *Territorio Sénia*.

Valencian Community

SPAB:

- *Alt Maestrat, Tinença de Benifassà* and hills of *El Turmell* and *Vallivana*.

SCI:

- *Tinença de Benifassà – Turmell – Vallivana*
- *The river Bergantes*
- *Alt Maestrat*

Within the area of the Valencian Community there are other protected status called flora micro-reserves.

Catalonia

SPAB – SCI:

Delta de l'Ebre
Mountain range of *El Montsià*
Southern pre-coastal system
Mountain range of *Godall*
Drylands of *El Montsià*

Aragon

SPAB:

- *Puertos de Beceite*

SCI:

- *Puertos de Beceite*
- *The River Matarranya*
- *The River Algars*
- *Ports de Beseit*

Natural parks

In this area, 3 natural parks exist: one in the Valencian Community and the others in Catalonia.

The Natural Park of *Tinença de Benifassà*

The Natural Park of the *Tinença de Benifassà* covers around 5.000 hectares and almost 26.000 hectares are affected by the Natural Resources Ordinance Plan (PORN). It was declared by the

Valencian Government on 19 May 2006 and covers the municipalities of *La Pobla de Benifassà*, *Rossell*, *Vallibona* and *Castell de Cabres*.

There, fauna is rich and diversified in species. Birds, mainly raptors, are the most diversified group within the vertebrates present in the *Tinença*. However, the most representative species is the Hispanic goat (*Capra hispanica*). Moreover, two interesting wildlife reserve, which give a special protection, can be found. One of them is the autochthonous crayfish (*Austropotamobius pallipes*) or the Spanish moon moth (*Graellsia isabellae*).



Specimens of *Capra hispanica* in *Tinença de Benifassà* Natural Park

With regard to the flora, pine forests of wild, hooked and white pine, holm and oak groves and riverside woods can be found. These formations are specially protected within the thirteen flora micro-reserves that can be found within the PORN area which give a special protection to endangered or endemic species such as the viola (*Pinguicula dertosensis*) or the arenaria (*Arenaria conimbricensis*).

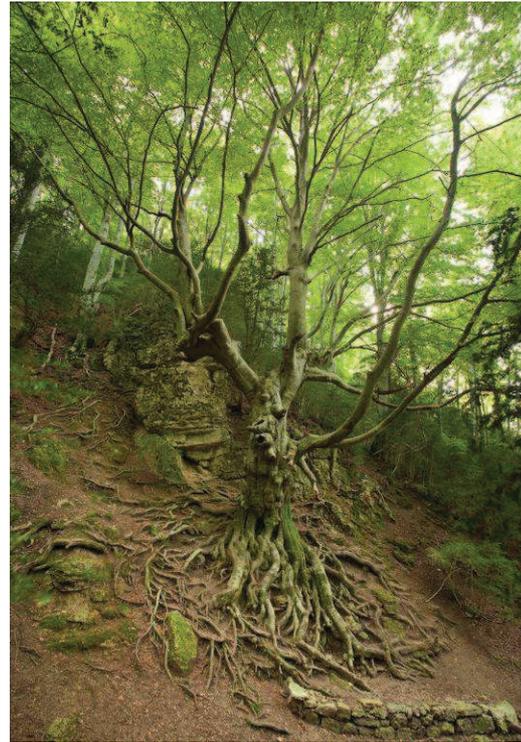
Apart from the protection that the Natural Park and the flora micro-reserves provide, the *Tinença de Benifassà* is protected as it is considered a Site of Community Interest (SCI) and a Special Protection Area for Birds (SPAB) as well.

The Natural Park of *Els Ports*

The Natural Park of *Els Ports* covers 35.050 hectares and includes 861 hectares of natural reserves and 205 hectares of Shelter to the Wild Fauna. It was declared by the Government of Catalonia on 12 June 2001 and covers the municipalities of *Alfara de Carles*, *Arnes*, *Horta de Sant Joan*, *Mas de Barberans*, *Pauls*, *Prat de Comte*, *Roquetes*, *La Sénia* and *Tortosa*. The municipalities members of the Mancomunidad Taula del Sénia included in the Natural Park are *Mas de Barberans* (3.589 hectares) and *La Sénia* (6.426 hectares).

From the faunistic point of view, it can be highlighted the Hispanic goat (*Capra hispanica*), the otter (*Lutra lutra*), the wild cat (*Felis sylvestris*) and the population of bats with twenty species approximately that constitutes one of the richest communities in the Iberian Peninsula. There can be found the 50% of the reptile and amphibian species in Catalonia. Therefore, interesting species such as the Iberian ribbed newt (*Pleurodeles waltl*) can be admired.

Regarding the flora, *Els Ports* is a real geobotany paradise no also for its plant diversity but also for its wealth of endemism. For example, beech trees are particularly interesting as they are the most southerly in the Iberian Peninsula.



“Faig Pare (Beech Father)”, the Natural Park of *Els Ports*

The Natural Park of *Delta del Ebro*

The Natural Park of *Delta del Ebro* covers 7.736 hectares and was declared by the Government of Catalonia in 1983. In 26 March 1993, it was included in the List of Wetlands of International Importance (Ramsar) and covers the municipalities of *Ampostà, Camarles, Deltebre, l'Aldea, l'Ampolla, Sant Carles de la Ràpita* and *Sant Jaume d'Enveja*. The only municipality member of the Macomunidad that is included in this Natural Park is *Sant Carles de la Ràpita*, which covers 2.753 hectares.

Therefore, it is a landscape with a great biological wealth that embraces diversity of flora and fauna with an incalculable value. In addition, it constitutes the largest aquatic habitat in Catalonia and represents a habitat of great importance within the wetlands in the Mediterranean area. Likewise, the confluence between the marine and the terrestrial environment gives rise to a high diversity of fish species. With regards to the bird species, more than 360 species have been mentioned in *Delta del Ebro* and include some of the most important seabird breeding colonies in the Mediterranean.



Colony of flamingos in the Natural Park of *Delta del Ebro*

Moreover, its great biological wealth contrasts with the profound humanization and agricultural transformation of most of its surface area. Marshes develop many vital functions such as water storage, protection against storms, coastal stabilization, nutrient and contaminant recycling, etc. In turn, they also provide economic benefits to the local communities through the traditional natural resource use by fishing, hunting, agriculture, livestock, salt mines and, currently, tourism.

Biosphere reserves

The Biosphere reserves are territories whose aim is to harmonize the preservation of the biological and cultural diversity and the economic and social development as well through the relationship between people and nature. They are recognised by UNESCO Man and Biosphere Programme.

Terres de l'Ebre Biosphere Reserve

It is one of the largest biosphere reserve in Spain: 367.720 hectares (terrestrial: 78.2% / maritime: 21.8%) and was declared on 28 May 2013. It covers 45 municipalities from the regions of *Baix Ebre*, *Montsià*, *Ribera d'Ebre* and *Terra Alta*. All Catalan municipalities within the Mancomunidad Taula del Sénia are included in this Biosphere Reserve.

Therefore, it is a maritime and terrestrial reserve which stands out by its heterogeneity and rich diversity of environments. There are two natural parks in its territorial area: *Delta del Ebro* Natural Park and Natural Park of *Els Ports*.

Human activity has always been present since antique times which has formed agricultural landscapes of outstanding beauty strictly related to natural spaces. Thus, many cultures have established their own cultural identity throughout history. Proof of this are the heritage features and cultural manifestations that lasts until today. It is highlighted the cave paintings that are declared World Heritage Site, many Iberian villages and settlements, remains of the Roman Via Augusta, the ancient olive trees, defence towers and medieval fortresses.

Furthermore, agricultural activity is fully integrated with areas of special natural value. Olive crops in the plains create a landscape known as the sea of olive trees. In addition, dry stone terraces exist in mountain areas which form a landscape overlapped to the level curves.



Landscape of olive groves in the area of the Biosphere Reserve of *Terres del Ebre*

National Hunting Reserve

The national hunting reserve of *Els Ports de Tortosa* and *Beseit* has an extension of 28.587,17 hectares and is formed by three autonomous communities: Catalonia, Valencian Community and Aragon.

The characteristic species within the reserve are the Hispanic goat (*Capra hispanica*) and the wild boar, which are deeply-rooted. These species are the only ones with a hunting use within the reserve; the first one in stalk hunting and the second one in beatings, which involve exclusively local hunters. This reserve is managed by the departments of the three autonomous communities collaboratively for the purposes of hunting. On the one hand, management bodies are constituted by an advisory board which represents councils, private owners, conservation organizations experts in the field of hunting and the Administration. On the other hand, the government body is constituted by the three departments responsible for the hunting management and the management of the national reserve.

PROTECTED SURFACE IN THE TERRITORIOSÈNIA						
	MUNICIPALITY SURFACE (ha)	NATURA 2000 NETWORK (ha)	BIOSPHERE RESERVE (ha)	NATURAL PARKS (ha)	PROTECTED SURFACE (ha)	PROTECTED SURFACE (%)
<i>Benicarló</i>	4.790	0	0	0	0	0%
<i>Càlig</i>	2.750	0	0	0	0	0%
<i>Canet lo Roig</i>	6.870	800	0	0	800	12%
<i>Castell de Cabres</i>	3.070	3.070	0	360	3.070	100%
<i>Cervera del Maestre</i>	9.320	0	0	0	0	0%
<i>Herbés</i>	2.710	2.710	0	0	2.710	100%
<i>La Jana</i>	1.950	0	0	0	0	0%
<i>Morella</i>	41.350	33.000	0	0	33.000	80%
<i>Pobla Benifassà</i>	13.600	13.600	0	13.600	13.600	100%
<i>Rossell</i>	7.490	4.000	0	2.900	4.000	53%
<i>San Rafael del Río</i>	2.110	0	0	0	0	0%
<i>Sant Jordi</i>	3.667	0	0	0	0	0%
<i>Traiguera</i>	5.980	0	0	0	0	0%
<i>Vallibona</i>	9.140	9.140	0	9.140	9.140	100%
<i>Vinaròs</i>	9.550	0	0	0	0	0%
VALENCIAN C. MUNICIPALITIES	124.347	66.320	0	26.000	66.320	53%
<i>Alcanar</i>	4.710	1.247	4.710	0	4.710	100%
<i>Freginals</i>	1.760	1.641	1.760	0	1.760	100%
<i>La Galera</i>	2.750	38	2.750	0	2.750	100%
<i>Godall</i>	3.360	1.333	3.360	0	3.360	100%
<i>Mas Barberans</i>	7.880	3.734	7.880	3.589	7.880	100%
<i>S. Carles Ràpita</i>	5.370	2.000	5.370	2.753	5.370	100%
<i>Sta Bàrbara</i>	2.820	0	2.820	0	2.820	100%
<i>La Sénia</i>	10.840	7.947	10.840	6.425	10.840	100%
<i>Ulldecona</i>	12.690	4.171	12.690	0	12.690	100%
CATALONIA MUNICIPALITIES	52.180	22.111	52.180	12.767	52.180	100%
<i>Beceite</i>	9.670	7.680	0	0	7680	79%
<i>Peñarroya</i>	8.330	4.897	0	0	4897	59%
<i>Valderrobres</i>	12.400	2.197	0	0	2197	18%
ARAGON MUNICIPALITIES	30.400	14.774	0	0	14774	49%
TOTAL MUNICIP. TAULA SÈNIA	206.927	103.205	52.180	38.767	133.279	64%

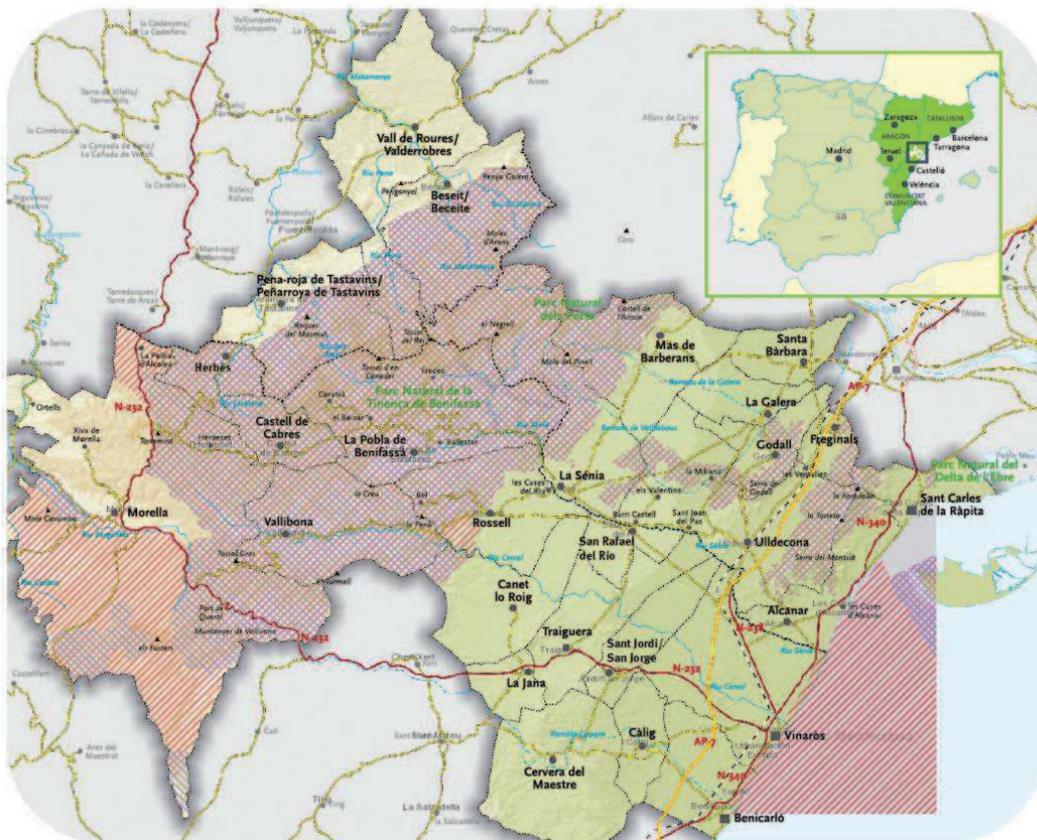
Lists of habitats and flora and fauna species of the different protected spaces are attached.

The area proposed as GIAHS includes the 207.000 hectares that form the whole Territorio Sénia. From these, 133.279 hectares (the 64%) has any kind of protection figure (SCI, SPAB, Natural Park or Biosphere Reserve). The area with no global protection figures coincides in part with the one with great presence of ancient olive trees, which are individually protected as long as they measure at least 3.5 metres of perimeter of trunk at 1.3 metres from the ground.

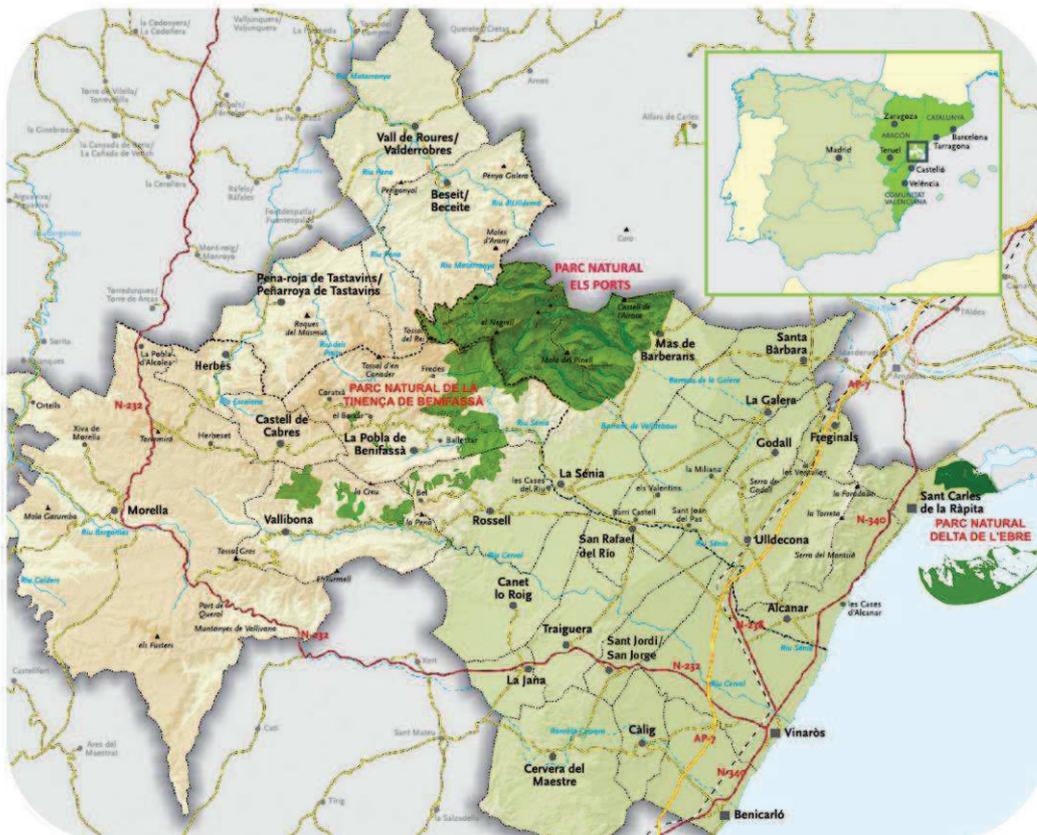
The Agricultural System Ancient Olive Trees covers all the territory proposed as GIAHS, both protected areas and those that have no territorial protection figures.

It is worth mentioning that the great concentration of ancient olive trees in this area and the prevalence of traditional varieties are not consequences of the existence of protection figures, as they are relatively new. The conservation of these specimens is due to the fact that these trees have been cultivated by hundreds of generations of farmers historically.

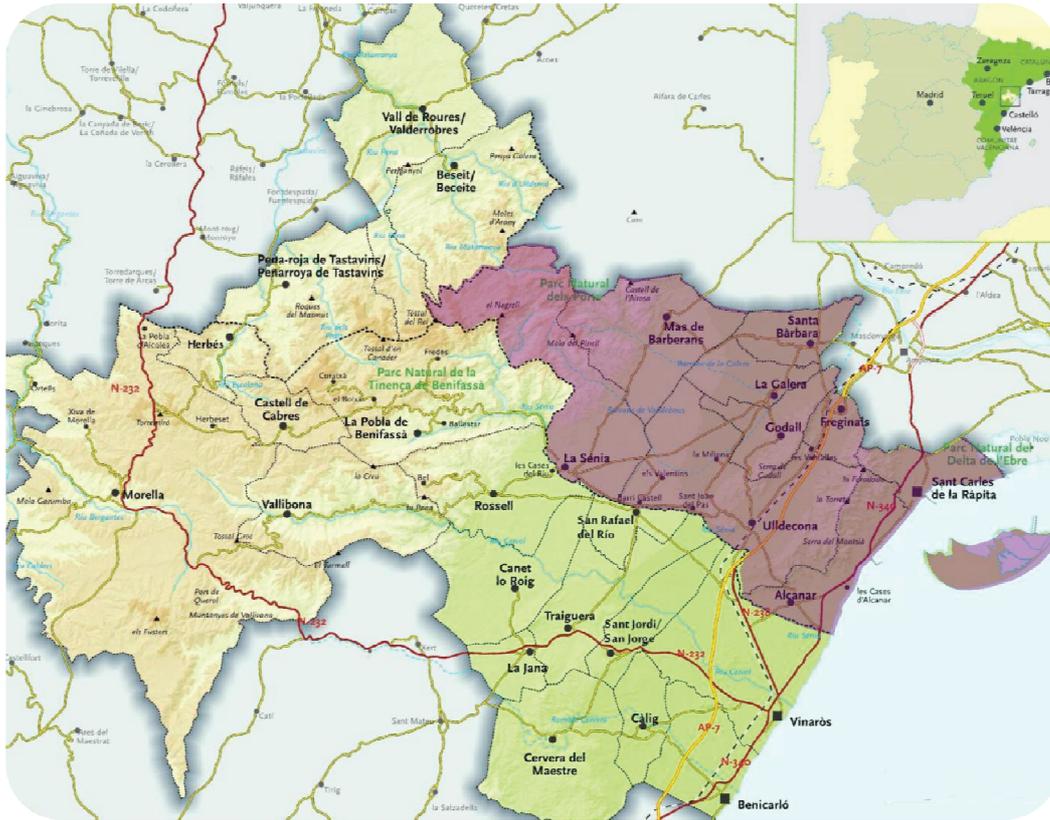
Within the area of the Agricultural System of the Ancient Olive Trees of the Territorio Sénia, there are different kind of protection figures. The aim is to make the activities of primary sector compatibles with the objectives of space conservation. Therefore, the activity of primary sector is improved and, at the same, time, it is developed with the minimal impact on the natural world. Likewise, farmers are used to live together with these protection figures, so they does not mean a problem for their agricultural activity.



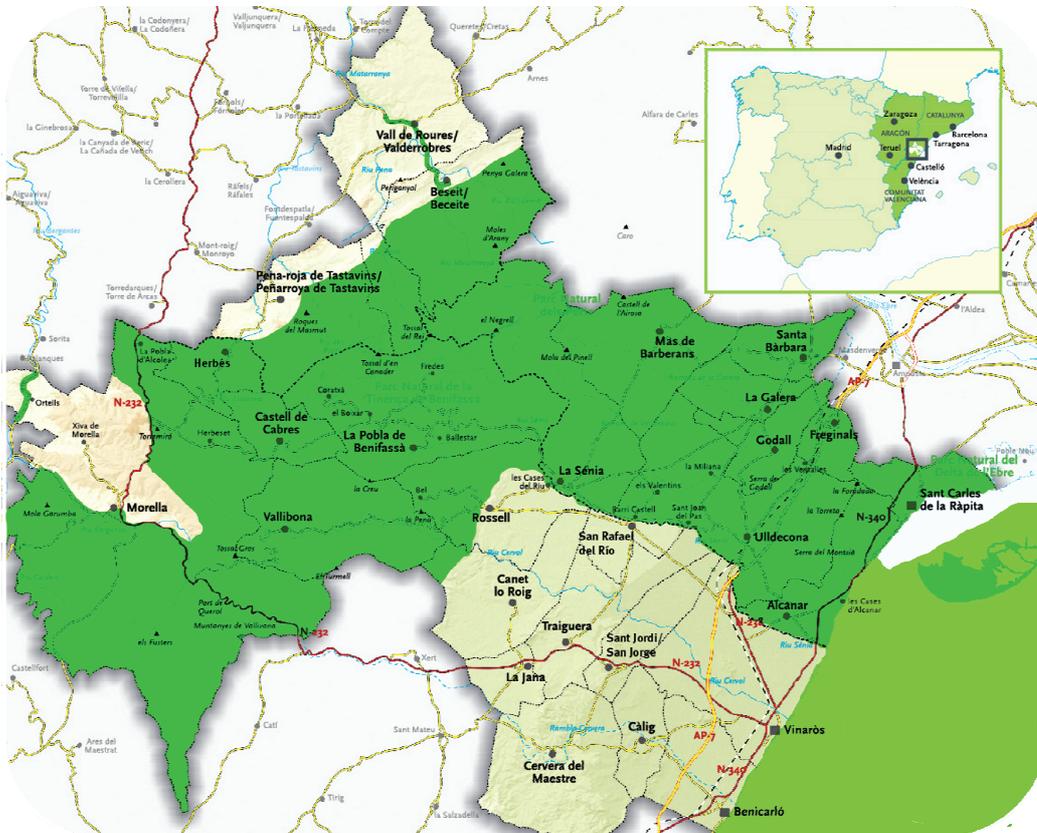
Map of Territorio Sènia, with the Natura 2000 Network areas (SCIs and SPABs).



Map of Territorio Sènia, with the Natural Parks



Map of Territorio Sènia, with the Reserve of the Biosphere area



Map of Territorio Sènia, with the whole protected surface of the territory

Local and traditional knowledge systems



II.2.3. Knowledge systems

The olive tree has been venerated as it has provided food and light since ancient times to all civilizations that have inhabited in the Mare Nostrum. It was considered a sacred tree by the Phoenicians, Greeks and Romans throughout history as a common element of wisdom, fertility, victory and peace. Fruit of the legacy from the civilizations who inhabited these lands, the olive trees have survived to these days and are living witnesses of the passing of time and history. As temples, monasteries and archaeological remains, the olive trees are part of the cultural and historic heritage of all municipalities of the Mediterranean. Moreover, they have an important distinctive as they are living beings. Contrary to other cultural and historic monuments, the olive trees are a living heritage that represent a unique treasure within the Mediterranean and the rest of the world. Furthermore, the olive tree is purely Mediterranean, perfectly adapted which have successfully survived to the bitter and hard weather. Likewise, this climate has preserved and moulded the spectacular shapes of these monumental olive trees.

The ancestor of the olive tree is the wild olive tree that spread through the Mediterranean thanks to bird species such as thrushes. This tree was domesticated in Near East 7000 years ago and the domesticated varieties were moved to the Iberian Peninsula by different civilizations.



Signalling of the Roman *Via Augusta* in the municipality of *La Jana*

The Phoenicians were one of the first settlement in introducing the olive groves in our lands. Over time, the Iberians learned how to graft the wild olive trees and turn them into olive groves within our lands. During the expansion of the Roman Empire, the olive groves were increased and the cultivation, collection, milling and storage methods were improved. Later, when the Arabs arrived, the olive groves were extended and new varieties perfectly adapted to these lands were introduced. Christian settlers, after the Reconquest, inherited these ancestral olive groves and maintained the old tradition of olive cultivation. Witnesses about the importance of the wild olive trees, oil mills and olive trees can be found in village charters, medieval establishments and procedures of the area.

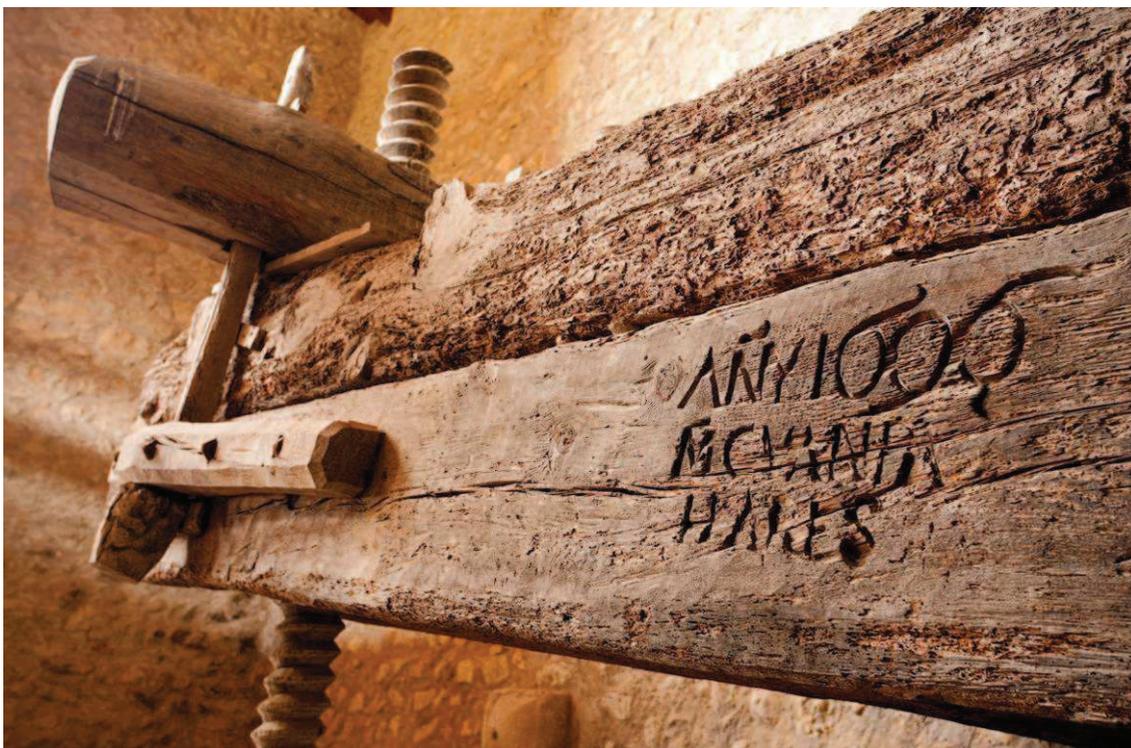
1281. *Pere Soler*, the commender of the Order of the Hospital, gave *Lady Dolçeta*, *Guillem Cogoma*'s wife, the permission to build an oil mill in the municipality of *Canet lo Roig*. The same year, the Order of the Hospital assigned an oil mill to *Arnau Català* and other neighbours of *Valltrayguera (Traiguera)*, known as the mill of *La Fuente* which is located in a ravine with its same name.

1283. *Guillem de Claramunt*, the commender of *Vercera* and *Amposta* gave all the oil mills in the village of *La Jana* to *Pere Vallès* and his wife, *Carrascal*'s neighbours and all their successors. Moreover, an oil mill was given to *Jacme Saranyana* in order to crush the olives in the municipality of *Càlig*.

1284. The monastery of *Benifassà*'s monks acquired the estate of olive trees of *Xalamera* in *Tortosa* due to the need of obtaining olive oil in the convent. The estate had a great quantity of olive trees and an oil mill. Bountiful harvests in this estate and other news about the oil mills of the monastery are mentioned in their documents.

1579. The capitulars of the Order of *Montesa* confirmed privileges for the siblings *Antoni* and *Andreu Montserrat* from *Canet lo Roig*, under the presence of the Master *Pere Lluís Galceran de Borja*. Among these privileges an oil mill is included.

1606. This is the only date mentioned about the oil mill of *Cervera del Maestre*. The date is carved in a pine beam from *Ares del Maestre* and is part of the grinding. It is though that the oil mill was build during this year even though the construction technique was inspired in medieval traditions.



Pine beam of the oil mill from *Cervera del Maestre*

1735. The rental agreements of the hostel in *Vallivana* (executed by the administrator in the name of the council of *Morella* from 1735 to the beginning of the 19th century) included a clause to ensure the hosts planted olive trees and cultivated them within the estates of the sanctuary.

1795. The botanist and geographer *Antonio J. Cavanilles* visited the *Maestrazgo* and described it. In reference to *Cervera del Maestre*, he mentioned: “thick olive trees can be admired as well as carob tree forests while vineyards can be found in largest regions, there are also crops and fig trees everywhere”.

1840. *Pascual Madoz* visited *Canet lo Roig* and wrote down: “beautiful vineyards and leafy olive groves can be seen all over the municipality as well as mulberry, almond and fruit trees”. Furthermore, he also added that wine was very good and olive oil production was irregular due to continuous storms in the municipality.

1919. *José Ruy Fernández* wrote in his book “Statistical and historic issues of the village of *Ulldecona*” about the great industry that already existed around the olive oil: “In *Ulldecona*, the major industry is the agriculture but there also exist flour and pomace oil production, a brick and tile factory, five flour mills and 120 oil mills approximately”.



Ancient oil mill of the Agrarian Association of Ulldecona. The building was designed by the architect César Martinell. Nowadays, it is restored and the tourism office is set up in it.

1956. Year of frosts. This year is remembered with anger, sadness and impotence by the elderly local residents. Many olive trees died due to the low winter temperatures, even some of the oldest ones. People had to wait for years to recover these olive trees and their productivity.

The olive oil industry has been hesitant not only in front of the technological change but also the productive cultivation techniques that have resisted to upgrading until well into the 20th century. The selection of the plant material, plantation, pruning, grafting or collection have depended tightly on local knowledge and cultivation techniques that were inherited by the Romans and can be found in the current olive cultivation practice. The olive groves in the *Territorio Sénia* have been introducing many small innovations successively (in terms of plantation, collection systems, farm implements,...) in order to be adapted to social and economic environment. However, they have remained on the

sidelines of the new olive growing which is based on intensive and super-intensive plantation and almost all irrigated.

Production systems based on local and traditional knowledge

Local and traditional knowledge concerns wisdom and skills developed by societies throughout history in relation to their interaction with their environment. These skills establish the base for decision-making on the fundamental aspects of the daily life and are an integral part of a cultural system that combines practices in the use of resources, social interactions, language and rituals. Traditional knowledge, identity and practices of the local communities are part of the lifestyles that allow conservation and sustainable use of biodiversity according to the United Nations Convention on Biological Diversity.

Many of the cultivation techniques of olive groves and oil production being practised nowadays were used in ancient times as they were described in Roman and Arabic agriculture treatises. Obviously, these treatises have not been read by farmers who have cultivated olive groves for generations nor even have ever heard about *Columela* or *Catón* as their knowledge have been transmitted orally, from generation to generation of farmers and have been adapted to the features of the territory.

Practices concerning olive growing are common in the whole *Territorio Sénia* and some characteristics and techniques used are specific of this territory as they depend on the type and variety of olive trees, the climate conditions and the legacy of traditions from past generations.

- plantation frameworks: distances of 12 metres between the trees and absence of geometry in the majority of cases. It is a legacy of the way the olive grove was started in this area. People took advantage of wild olive trees that already existed and selected the most vigorous ones in order to be used for grafting.
- Very low plantation densities, between 50 and 70 olive trees per hectare.
- Formation systems of 1 foot per olive tree. Normally, the traditional olive grove has 2 or 3 feet per olive tree.
- Size of the trees: monumental specimens with large tree tops.
- The 99% of the olive grove in *Territorio Sénia* is a traditional rainfed crop.
- The renewal of the olive trees is not done in the whole property at the same time. The olive trees that die are replaced by other young trees progressively.
- The predominant varieties in the territory can only be found in this area: *farga*, *sevillanca* and *morruda*.
- Pruning depends on the size of the trees and the weather in the area.
- Dry-stone buildings or land piled into mounds are used to protect the trunks of these olive trees with large tree tops against the wind.
- Pest control (olive fruit fly) is done in a coordinated manner in the whole territory by trapping.
- Concerning the production of olive oil, there is a strong tradition of partnership through cooperatives that mill the olives of hundreds of partners.
- Capacity for collaboration between the different cooperatives and olive oil producers. Although they are competitors, they are able to join them to carry on the project Ancient Olive Trees Territorio Sénia, create the Guarantee Mark Aceite Farga Milenaria and follow the Regulation and good practices.

Comparison table between traditional and model systems of olive growing

Exploitation models	Traditional rainfed T. Sénia	Tradicional rainfed	Tradicional irrigated	Intensive	High-density	Superintensive
Plantation framework	12 x12 m without framework	10 x 10 m.	10 x 10 m.	6-7 x 5-6 m.	5-7 x 2-4 m.	4x 1,5 m.
Number of olive trees/hectares	50 - 70	80 - 100	80 - 100	200 - 400	400 - 700	+ 1.500
System of formation	1 foot/olive tree	2-3 feet/olive tree	1-2 feet/olive tree	High goblet-shape crest	Goblet-shape crest with two branches/central axis	Central axis
Irrigation system			1.500 m3/ha	2.000 m3/ha	2.500 m3/ha	3.500 m3/ha
Average production	2.000 kg/ha	2.000 kg/ha	4.000 kg/ha	6.500 kg/ha	8.000 kg/ha	9.500 kg/ha

The olive grove within the Territorio Sénia can be included in the traditional rainfed exploitation model although it differs in some respects. The plantation framework is higher the traditional rainfed model and sometimes there is no existence of a regular plantation framework. The average number of olive trees per hectare is 60, which are formed by one foot and large tree crowns.

The olive grove in *Territorio Sénia* is a traditional rainfed crop with varieties totally adapted to climate conditions in the area, so it can survive without irrigation. Traditional irrigated olive groves need large irrigation systems, specially super-intensive olive groves as they require 3.500 m³ of water per hectare approximately.

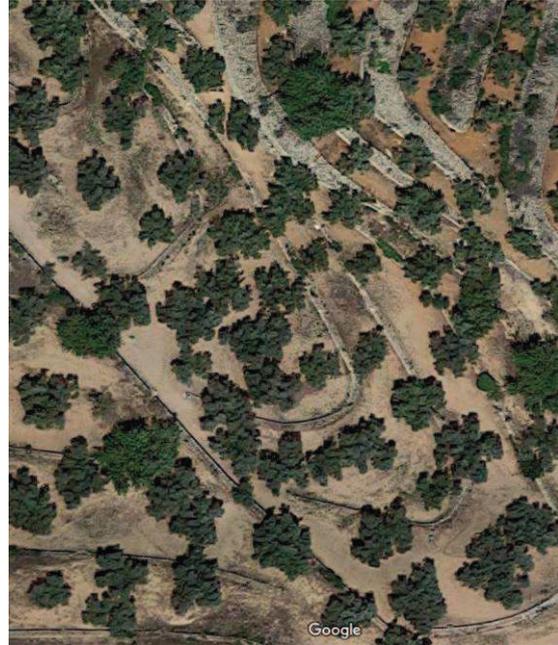
It is true that productivity increases considerably in irrigated crops, but ecological costs (erosion, salinization, pollution, overexploitation of aquifers,...) derived from these productive models make them unsustainable for the future.

Therefore, traditional rainfed crop is the most natural olive grove as it is the only one that take advantage of environmental conditions of nature in the place where harvest is obtained. Moreover, it does not compromise the future to next generations since resources are not overexploited.

It is also worth mentioning that useful life of traditional olive groves is limitless as evidenced by the specimens of monumental olive trees that already exist in the *Territorio Sénia*. This non-renewal of trees from time to time brings both environmental and economic benefits. The rest of production models have a short useful life of the olive trees, so trees needs to be renewed between the 15 and 30 years old.

Cropping and pruning

Knowing how and when to crop or prune olive trees or the different agricultural practices is very important in order to cultivate them properly. *Catón el Viejo* included in his works "About agriculture" descriptions of different techniques on cropping, pruning and care of the olive trees. Moreover, *Catón* recommended the 9x9 planting layouts which are the same used in our traditional olive groves currently. The widest planting layouts correspond to estates that own ancient olive trees without any kind of alignment. The reason for this lack of geometry in plantations is that these olive trees were not planted but wild olive trees already in the estate were used to graft the variety *Farga*. For this reason, the 96% of the ancient olive trees in *Territorio Sénia* are of this variety. Therefore, totally adapted specimens to the characteristics of the area with an incredible longevity were acquired.



Satellite view of an estate with ancient olive trees

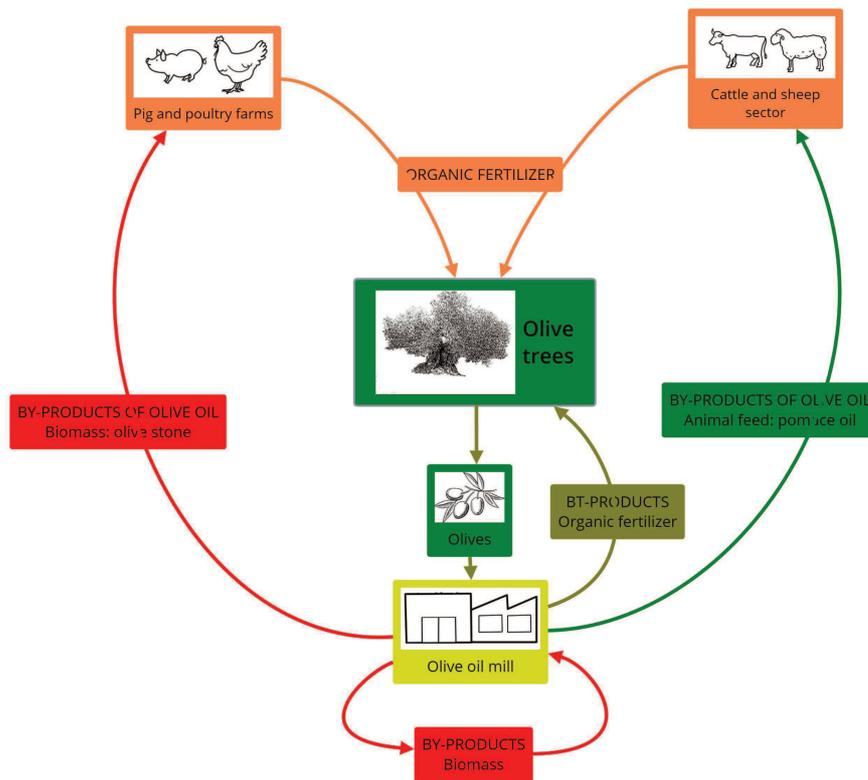
Fertilization

Fields are fertilized during spring with organic fertilisers.



The olive growing needs other activities from the primary sector the same way it favours them. Likewise, pig and poultry farms as well as cattle and sheep sector in the territory supply organic fertilizers to olive groves. The olives are transported to oil mills in order to produce olive oil, which creates subproducts that are difficult to process, both economically and environmentally.

Interrelation between different activities and economic sectors



Within the *Territorio Sénia*, these subproducts are reused in the majority of cases with the following economic and environmental benefit:

1. The olive stone is an excellent fuel used as a biomass resource for both the operating of oil mills (heating, hot water) and pig and poultry farms. The use of these kind of biomass as renewable energy allows economic savings and has advantages for the environment that other fuels are not capable of guarantee.
2. Leaves and the remains of olives during the milling process are also used as organic fertilizers to the own olive grove.
3. The remains of the milling process (pomace oil) are sometimes used as a food input in cattle and sheep sectors, specially during the winter when grassland is scanty.

Pruning

Pruning is done in March or April, when there is no risk of frosts. The tools used in pruning are the have always been the same (saws and scissors), in spite of chainsaws. Furthermore, pruning techniques should be in accordance with the climate of the area. For example, in Aragon the pruning has to enable trees to be resistant to frosts and the weight of snow. By contrast, in the plains in the area of *Castellón* and *Tarragona*, the pruning is made in a way that the olive trees can withstand the heavy winds.

Pest control

Moreover, during the summer it is necessary to fumigate in order to prevent the fruit from being infected by plagues, specially the olive fruit fly. This fly damages the olives and affects the oil quality, as it increases its acidity and contributes to organoleptic deficiencies. Treatments include fumigation with chemical products or attractants which trap the flies.



Old and new traps against the olive fruit fly

Within the Territorio Sénia, the olive fruit fly pest has been controlled with traps for the last several years. The placement of traps is generally carried out in all properties of the territory, which guarantees its effectivity.

Farmers can not only buy sophisticated traps but also make home-made ones by recycling transparent plastic bottles. Sex-attractants (pheromones), nutritional attractants (wine vinegar, hidrolizable proteins,...) or diammonium phosphate are added to bottles. Therefore, it is very important that the holes provided in the bottles measure less than 5 mm in order to prevent the entry of beneficial insects.

The use of traps to massive capture the olive fruit fly is a good way for the ecological control of the olive fruit fly populations and the reduction of treatments.

Other elements

Climate and landscape features have led to the creation of their own agricultural techniques such as the building of walloon structures around the base of the tree. These structures consist of dry stone walls around the trunk of the trees that prevent them from being pulled from the field due to strong winds. All this knowledge has been passed on following generations orally and is the result of the experienced gained by farmers throughout centuries.

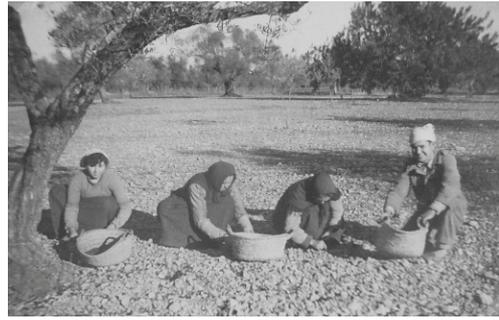


Walloon structure made by the dry stone technique around the base of a tree (*la Galera*)

Collection of the olive fruit

Particularly, collection of the fruit is a delicate task as the quality of the oil depends on how and when it is done. Recommendations about quality oils production are perfectly described in Roman farmers' books, specially in *Columela's* works, which gave recommendations on the best moment of collection of the fruit and how to squeeze it fast in order not to damage it: "when olive fruits change their colour into black but there are also green ones, they should be collected manually, sifted and cleaned in a serene day; after that, they have to be brought to the mill". Moreover, he also described the sensory characteristics of the olive oils, which demonstrates that the smell and taste of the olive oil were also a quality criteria in the 1st century: "Any delay in the collection will lead to a loss of the smell of the olive oils, which reminds the smell of the fruit". Besides, *Columela* was contrary to pick up olives from the ground: "Olives that have fallen to the ground do not serve to produce olive oil as they could have been eaten by worms or even fallen into a mud hole due to winds or rain".

In the *Territorio Sénia*, the collection of the fruit have not changed for many centuries. The collection system consists of dropping the olives or hitting the branches of the olive trees with a long stick until the olives fall to the ground. Then, the olives are picked up manually. In order to carry out such a hard work, family labour was used but if it resulted insufficient, other workers were hired in order to help with tasks. In the middle of the twentieth century, spiked rollers were introduced which facilitated the collection but, in turn, the oil quality was affected. In recent years, collection has been simplified thanks to the use of nylon meshes in the ground, meshes in an inverted umbrella shape, vibrators, among others which require less time and effort and improve the oil quality.



Collection of the olive fruit manually



Collection of the olive fruit with spiked rollers



Collection of the olive fruit with nylon meshes

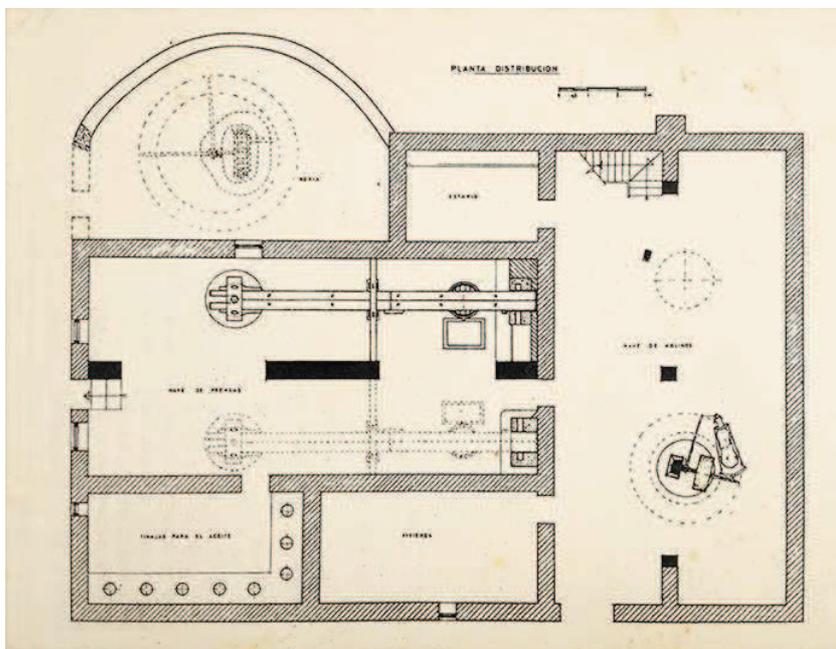


Collection of the olive fruit with vibrators

Milling and pressing

Although the process in the oil mills have not changed so much throughout years, evolution and technology have modified it slightly.

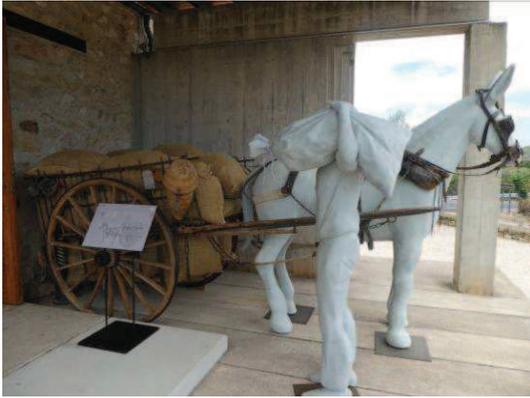
Within the *Territorio Sénia*, remains of many oil mills can be found, in which the evolution of the different technologies used throughout history can be admired. In many cases, these oil mills are found in dilapidated conditions and have experienced the plunder of great part of their machinery. In recent years, some ancient oil mills are being restored and turned into Interpretation Centres thanks to the awareness of the heritage value of the olive trees and their oil. It is an example the oil mill in *Cervera del Maestre*, with a Medieval origin, which grew and was adapted to technological changes in oil production. It was operational until 1920s. The building was declared an Official Asset of Cultural Interest in 2007 and was inaugurated as an Interpretation Centre in May 2018.



1. Dryer
2. Milling room
3. Pressing room
4. Cellar
5. Stable
6. Waterwheel

Floor distribution of the oil mill in *Cervera del Maestre*

This old oil mill is used to perfectly describe the operation of the process of milling, pressing and storage of the oil mill.



Transport by chariots

After the collection of the olive fruits, they were put into bags and carried to the oil mill with mule-drawn chariots.

Nowadays, the olive fruits are stored in breathable boxes and the transport is done by tractors and vehicles with trailers.



Drying of the olive fruits

Sometimes, the oil mill was not able to timely process all the olive fruits which had been transported. Afterwards, they were stored at the dryer and mixed daily with the help of a cane to prevent them from moho and fermentation. It was a meticulous process that must be made cautiously in order not to damage the olive fruits. Therefore, the olive fruits remained clean before entering to the milling process. If the oil mill was too small, the farmer used to take the olive fruits home, where they were stored and dried until 600 kg were joined. Then, this quantity of olive fruits was carried to the oil mill.

Nowadays, this practice does not exist and the olive fruits are transported to the oil mill and milled as fast as possible.



Milling room of the oil mill in *Cervera del Maestre*

In the milling room, plant tissues of the olive fruits were broken, as they contained the oily mass that created an even dough in order to be pressed. Until the middle of the 20th century, this task was carried out by oil mills formed by two stone presses, a horizontal one (sill) which was fixed on the ground and a vertical one (grinder) fixed to a wood vertical axis (years later, this axis was made of iron). These two presses turned around the sill and were dragged by donkeys. The surface of the grinding wheels was smoothed by wear, which prejudiced the efficiency. Therefore, the master builder needed to sink the sill one year and the grinder the following one in order to have always a rough stone.

Nowadays, this task is carried out with hammer mills.



In the pressing room, the olive paste was pressed. For this, the paste was separated by coats with pressing mats. The liquid content of the olives was obtained by pressing these coats. Throughout centuries, different systems have been used: shrine and tower presses, beam and quintal presses, water presses, etc.

Nowadays, pressing is carried out with stainless steel beaters.



Beam and quintal press in the oil mill of *Cervera del Maestre*

As a result of pressing, a mixture of oil and water was obtained and separated by decanting. This process was performed in sinks, where both liquids were separated by density separation. The oil stayed at the top, so it was extracted with ladles and jars to store it.

Currently, this task is carried out in decanters, which separate the three components of the olive paste: olive oil, vegetable water and pomace.



Sink used to decant the oil

The cellar was used to store the olive oil in large buried jars. These rooms used to be dark, with few windows in order to avoid the air or light entry as both of them damaged the oil properties. They were usually south facing to avoid oil freezing.

Nowadays, the oil is stored in stainless steel tanks, which are maintained at a constant temperature, usually at 15°C approximately.



Cellar. Oil mill in *Cervera del Maestre*

Local and traditional knowledge has a crucial role in tasks related to olive growing as the basic processes have always been the same, even though technology has evolved. This knowledge is important to recover old olive groves and return the ancient olive trees their real function, which means producing authentic liquid gold which was already tasted by Romans. Some farmers have developed recovery and restoring activities and they are following their parents and grandparents lessons. Therefore, they are guided by popular wisdom.

How these trees have been conserved throughout centuries

Without doubt, what explains better why these trees have been conserved throughout centuries is that almost all of them (the 96%) are of the variety "*Farga*". They are very

vigorous old trees with slow growth, large dimensions and respond well to radical pruning. After some years of abandonment, they can be recovered by pruning and fertilize them, so they are capable to produce olive oil again in two or three years. Therefore, it is evident their adaptation to climate conditions and soil characteristics.

Apart from the tree, the characteristics of its olive oil can be used to explain its conservation. People love its fruity aroma and well-balanced flavour. For this reason, although its production is lower than other varieties, this olive oil is highly appreciated by buyers and specially new global markets.

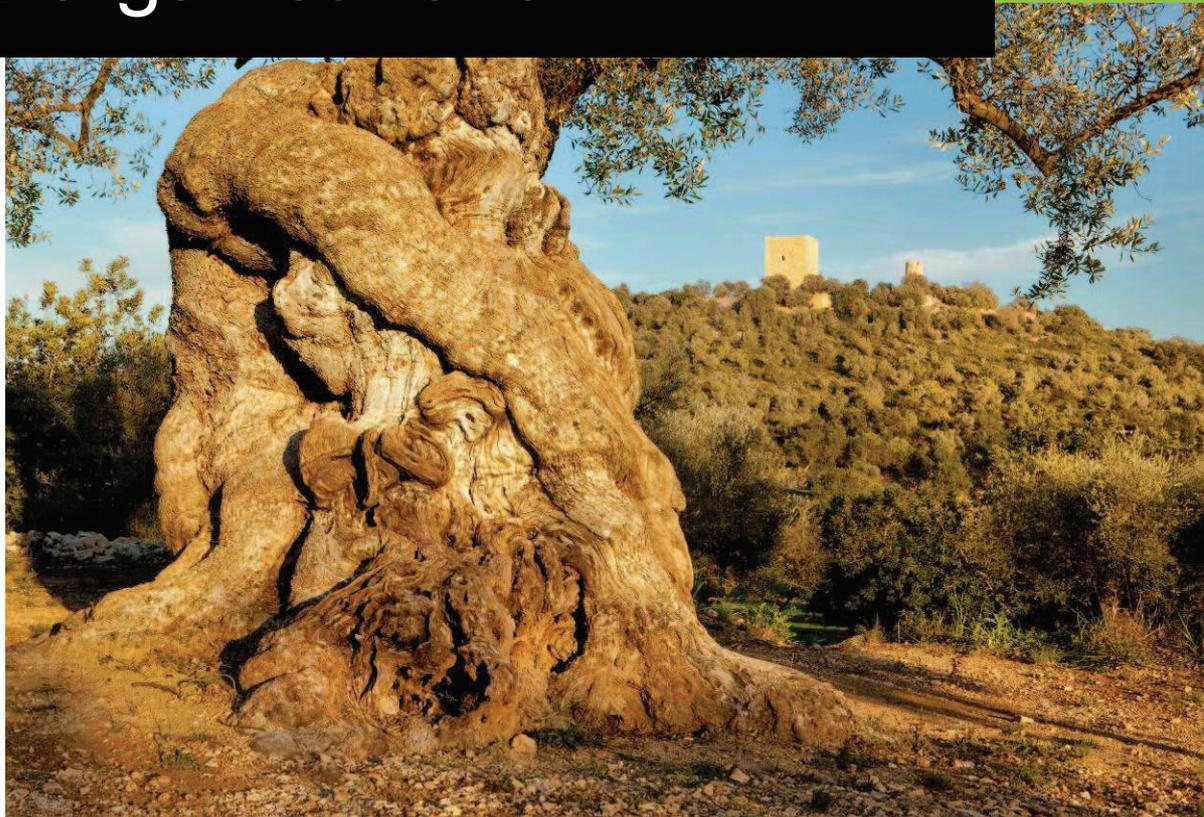
Another reason is that the traditional systems of cultivation in this area are plantations with very low densities, totally rainfed but with dry-stone margins and furrows to make more effective use of rainfall. Moreover, there are different varieties of olive trees in the same property so flower pollination and olives are improved.

It is also important the low rainfall in the area (in the last two years it only rained 406 and 305 liters per year respectively). Due to their size and vigorosity, these trees are more resistant to drought. Although sometimes the harvest is affected, these trees are not irreversibly damaged.

Farmers love these monumental olive trees and this is another reason to understand why these trees have been conserved. Some of these trees have a proper name: the *Farga del Arión*, the “4 feet” olive tree, the *Mater* olive tree, “The couples” olive tree, “The boyfriends” olive tree,... Or it is frequent that the farmer remembers he found shelter inside an olive tree during a day of heavy rain.

Now in particular, people are becoming more and more aware of the fact that these trees need to be conserved. A lot of people are happy to convey the values they received from their ancestors to future generations. It was the origin of citizen mobilisations together with different administrations, who are responding against the plunder of some exceptional specimens of ancient olive trees.

Cultures, value systems and social organisations



II.2.4. Cultures, value systems and social organisations

Throughout history, the olive oil has been an essential element in the feeding in this part of the world. Moreover, it has become a leading economic element, a colonization agent, a sacred food or even a representation of the own identity. The olive groves have been cultivated and their olive oil has been consumed through all the coasts of the Mediterranean Sea.

Gods' favourite tree is the olive tree: it was represented as the symbol of peace in the Bible by Yavé and also symbolized the own birth of the city for the Athenians, as this tree was created in Atenea. The Roman were more practical and established a law that exempted from military service those people who had planted some olive trees. This law was extended all over the Empire. Additionally, the olive tree was considered a symbol of the religious identity by Jews and Christians. In turn, olive oil was used to light lamps in sacred spaces in Islamic tradition.

Evolution of the olive oil in the *Territorio Sénia*

Phoenicians

From the 13th century before Christ, the different Phoenician cities began to create commercial establishments in the Iberian Peninsula. Regarding the *Territorio Sénia*, the area was dominated by Ilercavones settlements and did not own any Phoenician commercial establishment even though they established commercial contacts with some Phoenicians sailors. Instead, they exchanged agricultural surpluses and metals, among others, in return of many products such as olive oil, wine or salt). Probably, the olive oil was already known in the area of the *Territorio Sénia*, but it was included in the category of luxury product.

Greeks

In the case of the area of the *Territorio Sénia*, there is no evidence of the presence of any Greek colonies in the past. But the area was located between two of the major colonies in the Iberian coast: *Emporion (Empúries)* and *Hemerokopeion (Denia)*. Within the territory, ceramic remains and Greek coins were found, so it is thought that commercial contacts with them existed at least. Local population made contact with these foreign settlers. Despite it is confirmed that the first native people who cultivated the olive growing were the Iberians, this fact was due to their previous contact with Greek culture.



In the municipality of Cervera del Maestre, the archaeological site of *Mas d'Aragó* can be found. This settlement was built in the 5th century before Christ, when the Iberian culture was the centre of agriculture and pottery, which continued to function when the territory took part of the Roman provincial council *Hispania Citerior*. The *Mas d'Aragó* is a rural village that used to produce olive oil, wine and grain as well as their own ceramics. This was evidenced by the ovens found in this archaeological site.

Archaeological site of *Mas d'Aragó*

Moreover, it is very important to take into consideration that the *Via Heraclea* was created at that time. This *Via* was extended in parallel to the Mediterranean coast and reached *Tartessos*, in the South of the Peninsula, and followed old prehistoric paths. Some years later, when the area had already been dominated by the Romans, the *Via Heraclea* was turned into the *Via Augusta*, which communicated Rome with *Cádiz* and was the communication road within the territory. Anyway, it has been confirmed that the olive growing had already been consolidated in the whole area before the Roman rule. However, the cultivation was widely spread many centuries later.

Romans

At that time, the territory surrounding the river *Sénia* was completely dominated by the Romans. The *Via Augusta* crossed this area and was the main axis of this territory. Likewise, the area was structured in both agricultural villages and *llercavones* settlements, which were set in high areas but were starting to be abandoned. In any case, the Roman imprint was very present. The majority of cultivations were design following the Roman model, in which olive trees and grain predominated. Furthermore, since the establishment of the sea of olive trees, these ones have always been part of the landscape around the river *Sénia*.

It was exactly during this Roman time when *Ora Maritima* was written by *Rufo Avieno* (4th century before Christ). In his works, he described the details of the Pre-Roman Iberian coast and it included a description of an isle dedicated to *Minerva*, which was situated in the south of the mouth of the river *Ebro* and was plenty of olive trees. This isle was called *Oleum Flumen*, which literally means “a river of olive oil”. This expression has led to different theories. On the one hand, it is thought that although it was possible that this was a very important olive oil production zone, the expression could have just been a metaphor due to the reflection of the sun on the river. On the other hand, other theories suggest that the *Oleum Flumen* would be the same as the river *Sénia*.



March from *Ampostá* to *Cartagena*, emulating the *Escipión* legions, in their walk through the municipality of Traiguera

Al-andalus

The olive trees were possibly cultivated on both sides of the river *Sénia*. However, plantation was more intense in the south, where the Arabic imprint was longer. People of the territory took advantage of the presence of the Arabians as they consolidated both the olive growing and the extraction techniques, which were already started during the Roman time. Despite the Christian definitive conquest of the territory, some Arabian stayed to live in the area and preserved their old properties or activities related to the olive oil production. Therefore, part of the production and the commerce of the olive oil remained associated with Arabians for many centuries.

From this, many of the names of the measures for the olive oil, which were used traditionally in the area, come from Arabians. The reference measurement is canter (or cantir) that equate to 16 litres. Other measurements derived from the cànter have also an Arabic origin: cadap (or cadaf), which is equal to one-eighth of cànter, and màquila, which is equal to one-eighth of the cadap.



Measurements of olive oil. Museum collection of the oil mill in *Cervera del Maestre*

The gastronomy within the area can only be understood by knowing this historic moment, especially regarding its bakery: *pastissets*, *casquetes* or *panolis* are some of the recipes that include the olive oil with a significant relevance and derive from Arabic origins as well.

Medieval Age

Within the territories of the current *Mancomunidad Taula del Sénia*, the olive oil had a crucial role in contrast to many parts of the Christian Europe. Moreover, it has to be taken into consideration the important number of Arabic inhabitants that stayed to live in the territory. They were called the Moorish, who were compulsory converted to Christianity but also maintained many Arabic cultural features, such as their gastronomy. This social group had a good knowledge of the olive oil sector.

During the reign of *Jaume I*, a great part of the forests of the territory were cut down for timber in order to build ships. Afterwards, these lands were conditioned to cultivation, so the most efficient crops were planted: olive trees, vineyards, grain and carob trees. Contrary to other European areas, the olive tree was well regarded and a symbol of economic status.

Modern Age

The *Territorio Sénia* was the protagonist of the impetus of the olive oil production and export at that time. The production increased with expulsion of the Moorish, so many lands of vegetable gardens were left uncultivated. From this, rainfed crops such as the olive trees replaced these lands.

From the 18th century, the olive oil production increased significantly but it was low quality olive oil, which was intended for non-food purposes, such as lighting or

lubrication. This was a big turning point, as the olive growing was no longer a secondary crop but a commercial monoculture.

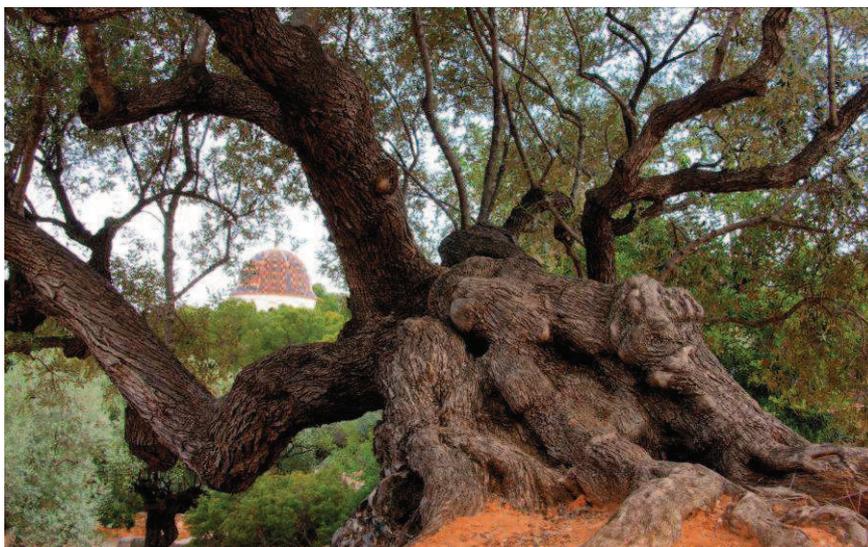
Contemporary Age

The territory of the current *Mancomunidad Taula del Sénia* focused mainly on the olive oil production at low prices, but the production of quality olive oils was also important. *Manuel Porcar i Tió* (1840-1917) was a very important person as he exported quality oil of the different territories close to the River *Ebro* from *Tortosa* to *Argentina*. In from of the difficulty in competing in the European market, in which Italians and Frenchmen sold olive oils at lower prices as they had a more developed technology, exports in America resulted in a very good opportunity. Thanks to this commerce, Porcar became a reference person regarding economy not only within the area (he was the founder of the *Banca de Tortosa*) but also in Catalonia (he became Mayor of Barcelona).

The implementation of new machinery to the olive oil production was more effective but implied additional costs as well. Therefore, from the beginning of the 20th century, the most common option was the creation of cooperatives, which joined different olive oil producers. These led them to process the olives in a common oil mill. Together with this cooperative model, there were also private oil mills. This arrangement is still maintained nowadays.

The ancient olive trees in the *Territorio Sénia* have produced olives and olive oil to their producers and final consumers for many centuries. It has been the same olive oil from the same olive trees, which results in an inheritance to many cultivators' generations that is nowadays available to everyone. Therefore, this is the result of the experience of a whole territory that has been covered with olive trees since the very first moment their crop was consolidated in the Peninsula.

Popularly, it has been considered that the older is the olive tree, the better the olive oil production is. Moreover, this is demonstrated by sayings like "*De vi, oli, porc i amic, el millor és el més antic*" (Among wine, olive oil, pigs and friends, the best are the oldest ones) or "*Oliveres del teu avi, figueres del teu pare i vinyes teves*" (Olive trees from your grandfather, fig trees from your father and your own vineyards). These old sayings put emphasis on the veneration of the ancient olive trees. So, regarding this matter, the Ancient Olive Trees in the *Territorio Sénia* are the best.



Ancient olive tree (*Alcanar*)

Oral tradition

al tradition on the olive oil and the olive growing are part of the culture in the form of sayings and refrains. A repository of popular sayings has been created due to centuries of olive growing, olive fruits collection and olive oil production. These sayings contain so much true in few words. Some of them are related to weather events, dates, saints, agriculture and human relationships: “Si por San Juan en tu olivar, aceitunas hallas, una aquí y otra allá, buena cosecha habrá” (If you find olive fruits in *San Juan* in your olive grove, one here and one there, there will be a good harvest).

Some of the ancient olive trees in the *Territorio Sénia* has an own name and their own history or legend, which are being transmitted from parents to their children.

The olive tree known as “4 patas” is located in the municipality of *Canet lo Roig* and was awarded as the best monumental olive tree in Spain in 2016 by the Spanish Association of the Municipalities with Olive Trees (AEMO). In the words of *Batiste*, who is its caregiver, his grandfather told him after the Civil War that one of the guerrillas “Maquis” came from “*Les Moles de Xert*” when fleeing war and hid himself into this olive tree. Therefore, he was not found and was able to come back to the mountain together with their colleagues. The name of this olive tree is due to its majesty and dynamics as it has four legs and seems to be emerged from the ground turning on itself with an expression that evoke magic and movement.



“4 Patas” olive tree (*Canet lo Roig*)

The olive tree of the “*llop*” (wolf) is located in the municipality of *Ulldecona* and its name is related to the legend told by its owner. During the 19th century, then the wolves inhabited these lands, a farmer could save his life by climbing this tree while a pack of wolves were stalking him.

The museum of the ancient olive trees in *Ulldecona* is located in an estate known as *El Arión*. It could be thought that the name has a mythologic origin but, according to

popular tradition, it is due to an old owner of the estate called *Hilario*. He was known as *Hilarión* due to his large and robust body size. Finally, his name was abbreviated and gave the name of the estate, *Arión*.

Moreover, popular wisdom has also been essential to add a greater sense of realism to the film "*El Olivo*" from *Iciar Bollain*, which was filmed in these lands and tells the harsh reality of the plunder of the ancient olive trees. The film also tells the story of a grandfather and his granddaughter, who begins a trip to a country in Europe in order to try to recover his grandfather's olive tree.



Scene of the film "*El Olivo*", in which the grandfather teaches his granddaughter how to graft an olive tree

Uses of olive oil

Among the uses of the olive oil, the culinary use is the most extended, appreciated and appropriate to enjoy the health benefits of the olive oil. It is the basis of most Mediterranean dishes and its aromatic nuances are the culmination of any dish.

The olive oil made a name for itself in haute cuisine thanks to the book *Nouvelle Cuisine*, which supposed an abandonment of the heaviest sauces and opted for cleaner tastes: the olive oil gives a picture of lightness, despite being a fat.

Furthermore, the olive oil has become an essential element in the most avant-garde cuisine. Nowadays, the creative cuisine has turned the olive oil into the main product in some dishes: candies, lollipops, foams, clouds or spheres of olive oil. In many restaurant menus, the olive oil is already included in many dishes, as a symbol of distinction and personality, being an added value.

The olive oil has not been only consumed as food, it has got many uses throughout centuries. All Mediterranean civilizations have used the olive oil as a divine product to cure diseases or for cosmetic purposes. Most of these ancestral traditions are used currently. Therefore, centuries of culture have been gathered around the world of the olive groves and their oil, which has been transmitted orally and can be classified as popular wisdom.

Soaps were made in a handcrafted manner and this is still practised in many municipalities, for their qualities and for taking full advantage of the excess oil. People used to produce them in a sludgy basin by mixing olive oil, caustic soda and water and stirring them in the same vein. Then, the mix was left to rest in wood blocks and after solidification it was cut into rectangular pieces. Soaps were used to clean clothes and cleaning purposes in general.

Nowadays, some companies in the territory produce soaps and cosmetic products, in which the ecological olive oil is the main and essential ingredient.



Replica: a woman producing soap

There are lots of receipts used within the area in order to cure diseases or beautify the skin. The crude olive oil or macerated with aromatic and medicinal plants are useful to treat wounds or skin diseases such as burns, scabies, dry skin, warts, earplugs or even internal woes like varicose veins, bruises or constipation. Due to its properties in healing, moisturising, antioxidant and high content in Vitamin E, among others, the olive oil is constantly used in cosmetics and medicine nowadays.

The use of the olive oil in canning is known since ancient times. During pig slaughter, pieces of meat and salad and fried charcuterie are covered in oil and preserved in clay vessels.

The olives prepared in traditional ways were inherited from the antiquity. The best olives in the tree are chosen when they are still green and are sweetened with soda or water. Then, they are preserved in brine and flavoured with aromatic plants. They can also be prepared in maturity (totally black) by using the technique of “sun and calm” (they are frozen at night and then dried under the sun).



Chopped olive preparation in traditional way

Lower quality olive oil was the essential fuel to power chandeliers, which illuminated houses.

Festivities and leisure events

Cultural manifestations with a playful character around the world of the olive groves and their oils heighten traditional practices and celebrate the outstanding milestones of the annual cycle of the olive growing and the extraction of its oil.

Agricultural work of the olive growing is varied and complex and usually require the participation of several people and their families. Therefore, these practices are considered a social action where effort, experiences and conversations are shared.

The beginning of the olive harvesting season, the extraction of the first olive oil of the year and the finish of the campaign are some of the milestones linked to olives trees, which are celebrated in the different municipalities of the *Territorio Sénia*.

- Fair of the new oil (*Santa Bàrbara*). It is celebrated at the end of November and the new olive oil can be tasted (the first olive oil produced). This fair is complemented by the Gastronomic Workshops of the olive oil cuisine.

- Fair of the olive oil and the asparagus (*Godall*). It is carried out in March to celebrate the end of the harvest. The olive oil of the season can be tasted as well as products like asparagus omelette or the “*panoli*” (bread with olive oil). The fair is complemented by visits to the oil mill.

- Fair of the olive oil (*Canet lo Roig*). It takes place the second weekend of June. It is essentially based on agri-food products of the territory, in which the olive oil is highlighted.

- *Olea Europaea* Festivity (*Uildecona*). It is celebrated the first weekend of December in the estate of ancient olive trees of *El Arión*. During the day, an amazing experience in an ancient environment can be enjoyed. Theatre and musical performances, workshops on the collection of the olives, production of cosmetics with olive oil, gastronomic space with tasting of olives with traditional receipts, varietal olive oils, textures and children’s activities are performed. The festivity is followed with an outdoor traditional meal and ends with a visit to an oil mill in order to admire the process of obtaining the olive oil.



Olea Europaea Festivity: theatre performance in the estate of ancient olive trees of *El Arión* (*Uildecona*)

- European Heritage Days. The *Mancomunidad Taula del Sénia*, in cooperation with councils, people and entities from the territory, has participated for the last four years in the European Heritage Days, which are organised by the Council of Europe. They take place between September and November and different activities are performed: itineraries on foot, by bicycle or car, guided visits, lectures, conferences, workshops, exhibitions, school activities.

The philosophy of the Days is to disclose the unknown and sometimes forgotten heritage that is part of our history and needs to be known and preserved in order to convey its values to future generations.

- Natural heritage (2014). 8 activities dedicated to make known the most spectacular ancient olive trees in the territory were performed.
- Industrial heritage (2015). 20 activities were carried out and most of them were dedicated to the heritage of the traditional oil mills within the area.
- Heritage of all, trees with history (2016). 29 activities were organised to make people aware of the importance of the tree heritage of the territory, in which the ancient olive trees are highlighted.
- Heritage and territory: rural architecture (2017). 45 activities were performed with total number of 2.199 participants. Emphasis was put on the total union of the landscape, the dry-stone architecture and the rural buildings around the ancient olive trees.



European Heritage Days 2014. Guided visit to the ancient olive trees in *La Jana*.

- Anniversary parties of the ancient olive trees. After the dating carried out by the Polytechnic University of Madrid, the age of some olive trees was discovered. In order to celebrate the anniversary of these ancient olive trees, some events are organised in which music bands and poets participate. Moreover, there is also a birthday cake.



Celebration of the 1.000 years old of an olive tree in *Godall*

- School activities. As it is important to disclose our heritage to youngest people, there was particular focus on them. Lectures in school centres and visits to the ancient olive trees have been performed in order to make this heritage known.



Visit of students to the ancient olive tree of *Las Parejas (la Jana)*

- Activities of exchange of experiences. Understanding other cultures is the key for the foreseeable future. The capacity of finding common ground is a tool that will serve to recognise plurality, protect our legacy and share experiences.



A group of Palestinian women visiting the ancient olive trees.



Group of oil distributors from China

New cultures and value systems

Apart from the cultures and value systems that have already been described previously, in recent years other cultures are emerging probably thanks to the first steps taken by the Agricultural System Ancient Olive Trees Territorio Sénia. Some of them are worth mentioning:

- New culture of the olive oil:

Nowadays, farmers in the area have focused on the quality of their olive oils due to improvements in production, elaboration, bottling and preservation processes. Traditionally, they used to produce low quality olive oils.

Moreover, gastronomy has been enriched by the diversity of single-varieties olive oils that are produced within the territory with the combination of various products: truffle, artichokes, citrus, fishmeal, meat, etc. (For this, it has been important the work of the Fundación Alícia and other acclaimed chefs like *Ferran Adrià*, *Joan Roca*, among others). Olive grove and environment are terms which are related to the *Territorio Sénia* as the 99% is formed by rainfed olive groves of traditional varieties. Therefore, these olive groves are the best barriers to stop wildfires and help to reduce important amounts of pollution as well. In this way, olive groves are great allies in the fight against climate change. Olive oil and health. The olive oils of traditional varieties from the Territorio Sénia (*Farga*, *Morruda*, *Sevillenca* and *Empeltre*) are certainly a valid prevention tool in cardiovascular diseases (Dr. *Ramón Estruch*, from Mediterranean Diet Foundation) due to the beneficial effects of their fatty acids and their high content in polyphenols.

- Culture of cooperation between various private sectors

Apart from the culture of cooperation between various and very different public sectors (which will be explained at the end of this chapter), it is worth mentioning the new culture of cooperation between private sectors related to this System, both economic (farmers, oil mills, touristic companies, restaurants, ...) and social (the entire network of the area). Recently, even educational sectors (teachers and students) are taking part of the project as they are of great importance for the future.

- Protection of the landscape of ancient olive trees

Thanks to the work done thus far, population has been made aware of the fact that the landscape of ancient olive trees needs to be protected. Likewise, a proposal for legislation has been submitted to the Catalan Parliament in order to protect the monumental olive trees, which will have to be discussed and approved soon. This proposal was based on the existing Law in the area of Puglia (Italia), which is more protective than the one in the Valencian Community.

- From the abandonment to the recovery of the unproductive ancient olive trees

It is true that some of the ancient olive trees were abandoned as they were located in very small estates or their exploitation costs were too high. After first trials of recovery, many young people opt for the work of recovery and put on value of the ancient olive trees which were abandoned as a future alternative since this practice can enhance employment opportunities. Approximately, trees can be recovered in two or three years.



Social organisations

In the section II.1.4, in describing the good example of public-private cooperation in the System Ancient Olive Trees in the *Territorio Sénia*, all public and private entities and individual persons have been mentioned. There has been included organisations which collaborated in the past or collaborate currently and will continue do so in the future.

The graph below shows the functional diagram of the GIAHS Ancient Olive Trees *Territorio Sénia* at all levels of participation: public, private, institutions and companies that cooperate with it.



Mancomunidad Taula del Sénia. Local public entity, which is formed by the councils of 27 municipalities from Valencian Community, Catalonia and Aragon. It was founded 12 years ago and works towards their inhabitants. Moreover, it works in cooperation with many public and private sectors and lead the program of preservation and putting on value the ancient olive trees in its territory.

Inside the figure of the *Mancomunidad*, the 27 councils which form it are included. Regarding the ancient olive trees, they are totally coordinated by the *Mancomunidad*, although some of them also integrate local level action.

The *Mancomunidad* manage all actions related to the Ancient Olive Trees and their oils, but all decisions are taken in consensus with the *Asociación*.

Asociación Territorio Sénia. Private non-profit association which is formed as 50% by the *Mancomunidad* and as 50% by different economic sectors. It is necessary the agreement between the two parties (public and private) in decision-making, regardless of the number of assistants in a meeting. Apart from all the oil mills included in the Guarantee mark, there are also olive trees owners, restaurants and tourist companies, among others, which are part of the *Asociación*.

Local community. On the one hand, the extensive association network of the area is included in this groups: cultural, civic, sporting, environmental entities, among others. These entities cooperate by participating in the European Heritage Days as well as in festive events related to the ancient olive trees or even sharing their claims against the plunder of some of these specimens.

There are also included the education centres (schools) within the *Territorio Sénia* that participate in an annual contest about a topic related to the territory (ancient olive trees, artisans, dry stone technique). The prize is a trip to the winner of each centre and a guest to a place related to the topic. Moreover, the *Mancomunidad* have been ask for giving talks on the topic of the contest in the education centres.

The Government of Spain, 3 autonomous communities and 3 provincial councils. Public institutions that have committed to support the candidature of this Agricultural Heritage System Ancient Olive Trees *Territorio Sénia* are included in this group. In detail, these institutions are the Ministry of Agriculture, the Ministers for Agriculture from the Valencian Community, Catalonia and Aragon and the presidents of the provincial councils of *Castellón, Tarragona* and *Teruel*.

All groups work to provide funding, from both companies or institutions.

Research centres and others. Following experience gained, close cooperation will continue with agricultural research centres from the 3 autonomous communities (IRTA, IVIA y CITA). There also cooperates the *Fundación Alicia* (leading experts on gastronomy) and others: *Biodiversidad, Dieta Mediterránea* and *Catalunya La Pedrera*. Regarding universities, it is important to note the Polytechnic University of Madrid, the University of *Córdoba* and the IFAPA. Other national entities such as the *Asociación Española Municipios del Olivo*, the *Patrimonio Comunal Olivarero*, or international ones like the International Olive Council also cooperate.

Importance of the cooperation between all institutions

Firstly, the own *Mancomunidad de la Taula del Sénia* is formed by 27 councils (15 from the Valencian Community, 9 from Catalonia and 3 from Aragon). These municipalities have in common their history, geography, language, culture and the highest concentration of ancient olive trees. However, there are also great differences between them:

- Population: from 28.292 to 17 inhabitants
- Surface: from 413,5 to 17,4 km²
- Others: coast and inland, income levels, depopulation or minimal increase, etc.
- At a political level: mayors are members of Socialist Party (10), Popular Party (8), PDeCAT (3), ERC (2), Podemos (1), IpC (1), Compromís (1) and PAR (1).

From this, the basic principles of the *Mancomunidad* during its 12 years of operation are the following ones:

- Consensus among municipalities and putting aside their differences (agreements are taken unanimously).
- Collaboration with all institutions
- Cooperation with economic and social sectors

The President is renewed every year and the direction is carried out by the Manager.

The *Mancomunidad* has already signed agreements with all institutions: state Government, autonomous communities and provincial councils. Thanks to their financial support, the *Mancomunidad* has performed actions in rural paths, reindustrialization, rural development, employment, new technologies, tourism and, recently, ancient olive trees. Finally, cooperation of all institutions with the System Ancient Olive Trees *Territorio Sénia* has been achieved.



Regarding provincial councils, their Presidents are the following ones:

Castellón: Javier Moliner (Popular Party with an absolute majority)

Tarragona: Josep Poblet (PDeCAT, together with the Socialist Party)

Teruel: Ramón Millán (PAR, together with the Popular Party)

Over the past two years, agreements with the 3 provincial councils have been signed related to the ancient olive trees. They have provided a total sum of 72.500 € that have helped to perform a travelling exhibition, various leaflets, dating of some ancient olive trees and, nowadays, a book is being prepared with topics related to recipes from restaurants, oleotourism, pictures and testimonies.

With regards to the Autonomous Communities (Valencian Community, Catalonia and Aragon), the 3 Ministers of Agriculture have signed a letter of support and aid commitment to the System Ancient Olive trees Territorio Sénia in spite of their existing differences between their governments and a time of serious difficulties (Socialist Party in Valencian Community and Aragon and PDeCAT and ERC in Catalonia, who are secessionists). Previously, works in rural roads maintenance, which were supported with financial aid by the Government, were directed by technicians from the 3 Autonomous Communities. Later, they signed a Tourism agreement that allowed performing various actions. Nowadays, the Mancomunidad is working to achieve the same in other fields: culture, employment, environment, ...

Moreover, the *Mancomunidad* has always maintained a close relationship with the state administration, even though it has changed throughout these years, as they have helped with financial support as far as possible. After a first pilot project started, which included the actions related to the ancient olive trees, 3 agreements related to rural paths and 1 agreement related to rural development were signed. Regarding culture and heritage, the *Mancomunidad* was chosen by the Ministry to submit the landscape of ancient olive trees to the European Landscape Award of the Council of Europe and receiving a special mention. Finally, the Mancomunidad counts on the counselling and support of all the institutions mentioned before and the members of the Ministry of Agriculture for its Agricultural Heritage System Ancient Olive Trees *Territorio Sénia* and its candidacy to FAO.

At an European level (European Parliament, European Commission and Council of Europe), the Ancient olive trees Territorio Sénia has been appreciated for their importance and uniqueness as an agricultural, gastronomic, cultural, environmental, touristic and landscape heritage. For this, to achieve the recognition as an Agricultural Heritage System would be so important for the area at a global level.

Monitoring and evaluation commission of the GIASH

In order to carry out the monitoring and the evaluation of this Agricultural Heritage System Ancient Olive Trees *Territorio Sénia*, a monitoring and evaluation commission will be created, which will be chaired by the president of the *Mancomunidad Taula del Sénia* or his delegate and a representative of each of the following entities: *Asociación Territorio Sénia*, Ministry of Agriculture from the Valencian community, Catalonia and Aragon and the provincial councils of *y Castellón, Tarragona* and *Teruel*. By commission decision, representatives of institutions and companies which participate financially could be part of it in the future. The commission will be reunited twice a year, at least, and the operating rules will be determined then.

Landscapes and seascapes features



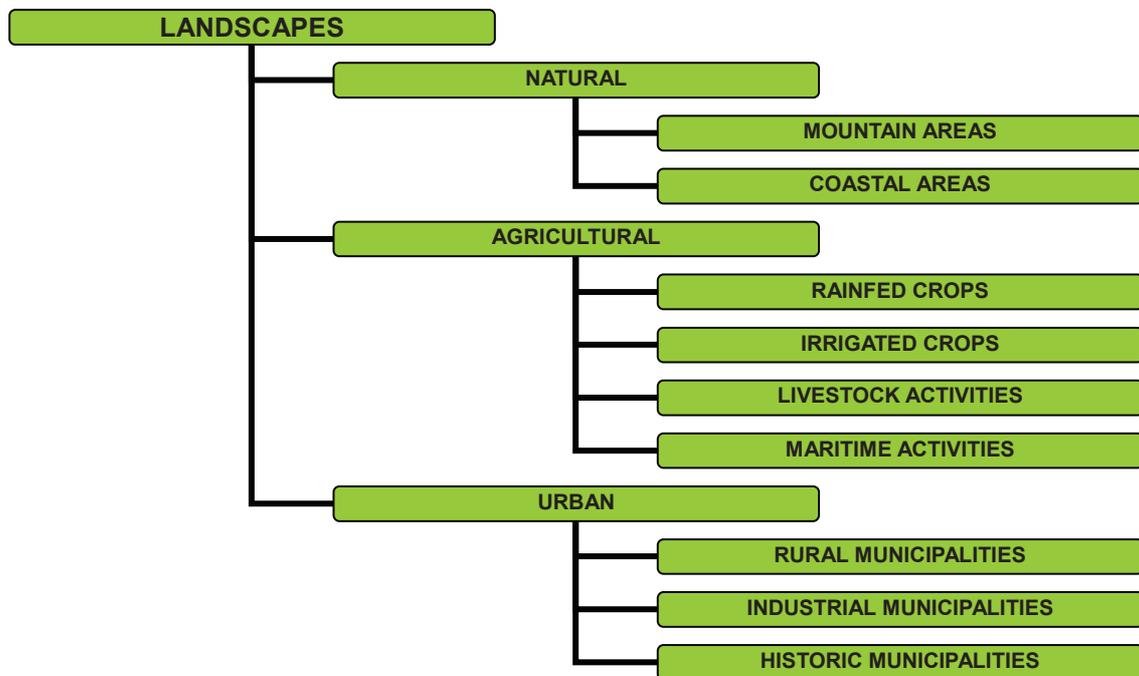
Landscapes and seascapes features

The landscape is the scenery of the human activity, so it is the joint work between the human being and the nature. Furthermore, it is the materialization of the past of peoples and their expectations for the future at the same time. Therefore, to reclaim the importance of the landscape is not only an aesthetic but also a cultural heritage matter, as population feel identified with it and their own history is explained.

According to World Heritage Convention, the cultural landscapes are illustrative of the evolution of human society and settlement over time, under the influence of the physical constraints and/or opportunities presented by their natural environment and of successive social, economic and cultural forces, both external and internal.

Landscape diversity

The *Territorio Sénia* is characterized by the great landscape diversity, which can be classified as follows:



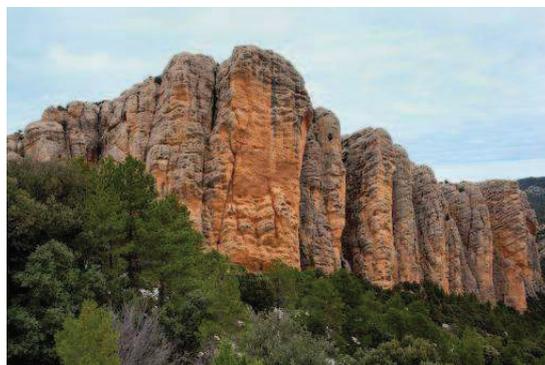
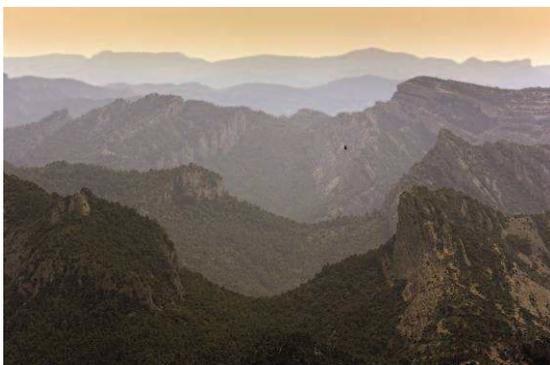
The interpretation of the landscape is the key to understand the transformations the territory has experienced throughout history. The imprint of economic traditional activities linked to agriculture, livestock, fishery or forestry development have shaped these physical sceneries that nowadays are symbolic and cultural references in a local community.

This wealth of landscapes has currently become in a touristic resource and a territorial asset that must be used responsibly as a factor of local and social development. It is necessary to seek cross-cultural and cross-generational dialogue that let local communities to learn from their history, tradition, values, necessities and future prospects.

The *Territorio Sènia* is a land of contrasts, as confirmed by its landscapes. Its municipalities are spread between 1.129 metres (*Castell de Cabres*) and 7 metres (*Vinaròs*) above sea level.

MUNICIPALITY	Height above sea level of urban area (metres)
<i>Castell de Cabres</i>	1129
<i>Morella</i>	984
<i>Peñarroya deTastavins</i>	746
<i>Pobla de Benifassà, La</i>	705
<i>Herbès</i>	672
<i>Vallibona</i>	666
<i>Beceite</i>	580
<i>Valderrobres</i>	520
<i>Rossell</i>	504
<i>Sènia, La</i>	365
<i>San Rafael del Río</i>	360
<i>Mas de Barberans</i>	348
<i>Canet lo Roig</i>	329
<i>Cervera del Maestre</i>	316
<i>Jana, La</i>	299
<i>Traiguera</i>	271
<i>Sant Jordi/San Jorge</i>	175
<i>Godall</i>	168
<i>Ulldecona</i>	133
<i>Freginals</i>	126
<i>Càlig</i>	122
<i>Galera, La</i>	120
<i>Santa Bàrbara</i>	79
<i>Alcanar</i>	72
<i>Benicarló</i>	21
<i>Sant Carles de la Ràpita</i>	11
<i>Vinaròs</i>	7

Out of 10 municipalities of the *Mancomunidad* are over 1.000 metres above sea level. The highest summit is *Tossal d'en Canader* (1.396 m). Moreover, *Tossal del Rei* (1.356 m) is the point where Valencia, Catalonia and Aragon are united.





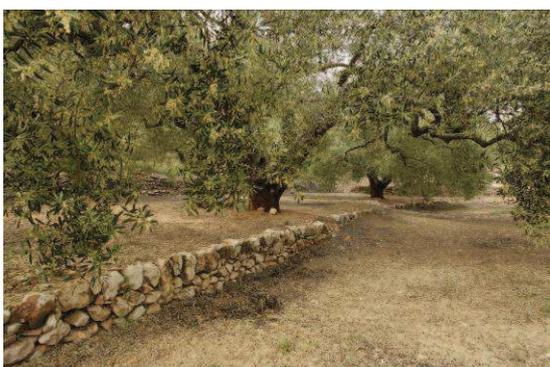
Their mountains are crossed by waterfalls, ravines and rivers such as the Sénia, the Matarraña, the Cervol and the Bergantes rivers.



Furthermore, extensive livestock (sheep and cattle) is very important specially in mountain areas, where landscapes are more abrupt and rougher and large areas with grass are needed for their livelihoods. Within these areas, there are also farmers who continue practising transhumance, so animals are moved on foot from one pasture to another depending on the season.



Another differentiated area is the intermediate one, where municipalities are located between 100 and 500 metres above sea level. There, the common and basic crop is the olive grove, so it creates a landscape known as “the sea of olive trees”. However, there are also other crops such as carob trees, almond trees and grain. The highest concentration of ancient olive trees in *Territorio Sénia* can be found within this area.



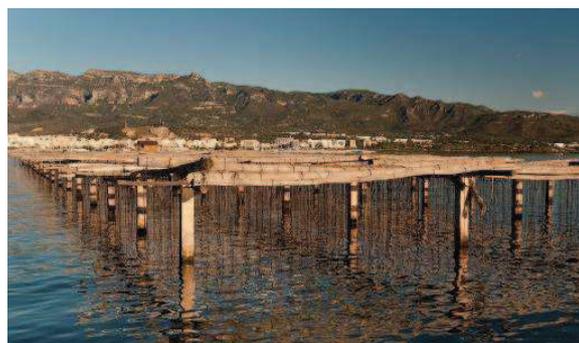
At the same time, it is difficult to find a territory with so many kilometres of coastline: from *Benicarló* to *Sant Carles de la Rápita* passing through *Vinaròs* and *Alcanar*. Moreover, it includes the natural areas of *El Trabucador* in *Delta del Ebro*.



In these areas near the sea, irrigated crops can be found, specially citrus fruits and artichokes or other vegetables.



In coastal areas it is possible to find totally different landscapes, such as large rice paddies in *Delta del Ebro* or oyster and mussel cultures that create an unique landscape.

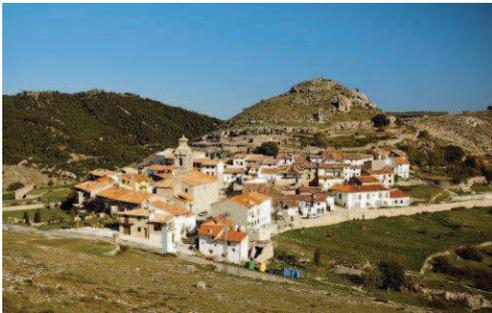


Therefore, the height above sea level, the terrain, the distance from the sea and the different human activities conform many ecosystems that create a diverse, unique and spectacular landscape.

In many cases, mountain and sea landscapes are lined so it is possible to enjoy the beauty of both of them in the same place.



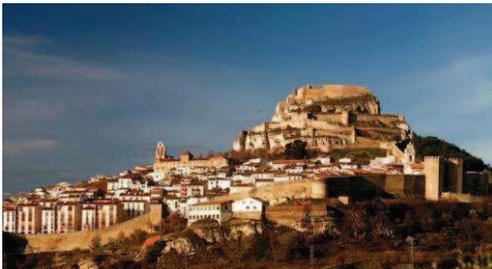
Moreover, urban landscapes are varied, depending on the number of inhabitants, the geography, the activities and the urbanistic evolution.



In the *Territorio Sénia*, there are some areas with very low demographic density and their few inhabitants are concentrated in small rural municipalities totally integrated to their environment, with which intricate interrelationships are developed. This is the case of Castell the Cabres, which is located above 1.100 meters of height and has only 17 inhabitants, and other municipalities such as Herbés, Vallibona and La Pobla de Benifassà.



By contrast, urban municipalities can also be found. In spite of maintaining farming activity, they have more industrial vocation and it is reflected to the landscapes they create.

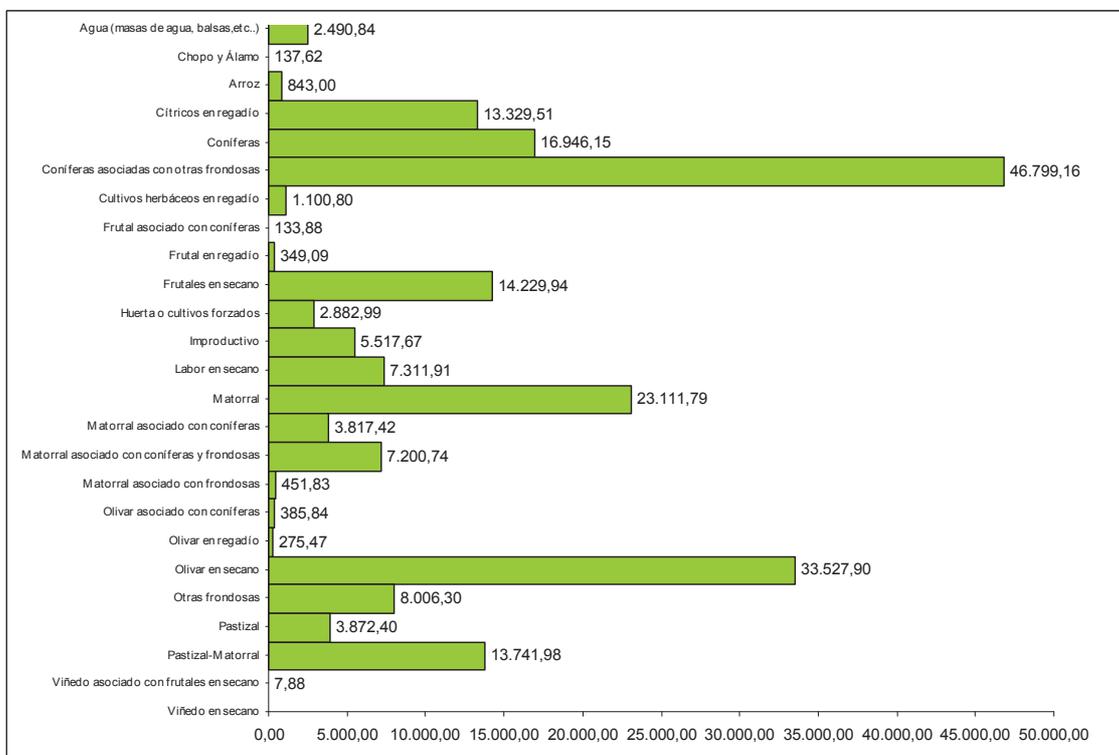
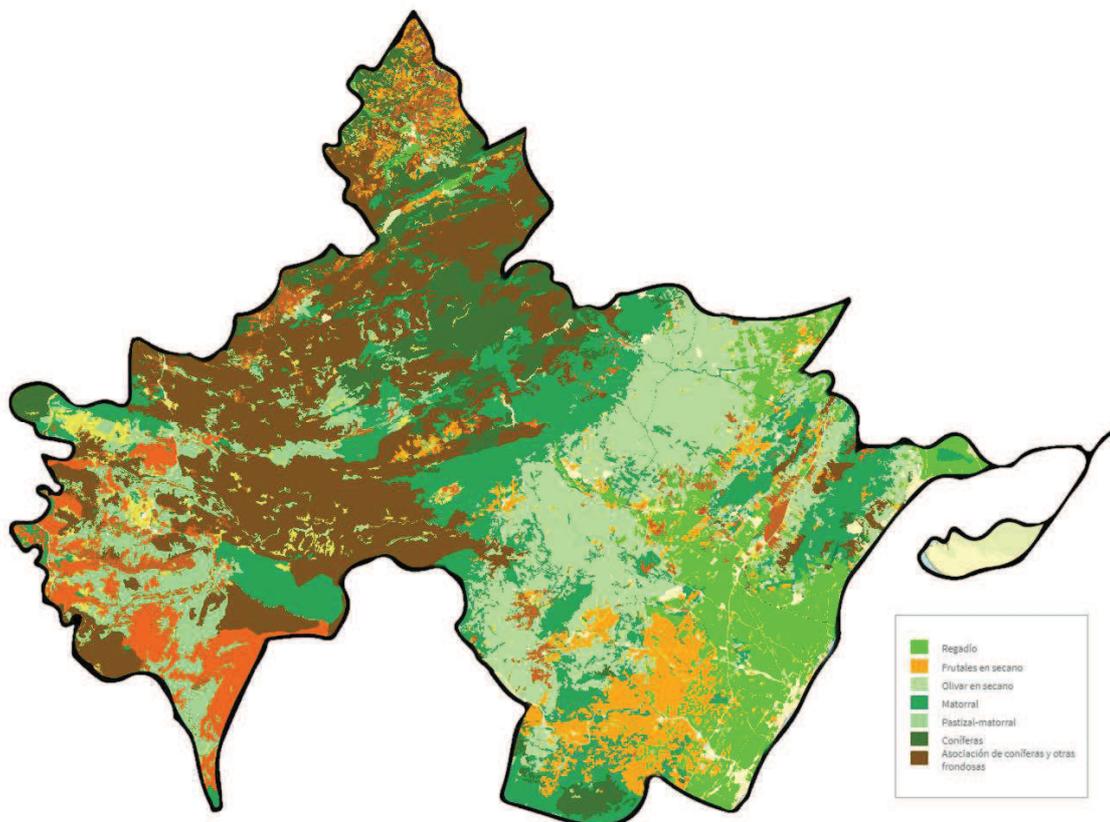


Within the *Mancomunidad Taula del Sénia*, there are municipalities with rich and important historical past which know how to preserve their physiognomy and essence practically intact throughout centuries. They offer stamps truly exhilarating, such as *Morella* and *Valderrobres*.

Concerning land uses, three clearly differentiated areas in the Territorio Sénia can be described, which correspond to the landscapes described previously:

- 1) Inland area where conifers, leafy trees and grass predominate.
- 2) Intermediate area where rainfed olive groves and fruit trees predominate.
- 3) Coastal area with irrigated crops.

A map and a graphic of land uses in Territorio Sénia are shown hereunder:



Landscape of olive trees

The olive growing in the *Territorio Sénia* is a unique adaptation to space with long and fruitful history. It has its roots in the first processes of agricultural domestication and has got a key role in their history, culture, economy, ecology and beautify of its landscapes.

Therefore, the olive tree is an essential part of the landscape of the *Territorio Sénia* and constitutes the living environment of great part of the population in these lands. The olive tree and its derived products are part of the culture, art, literature, folklore, rituals and, evidently, gastronomy.

The olive groves within the *Territorio Sénia* are characterized by the presence of traditional varieties of olives such as *Farga*, *Morruda*, *Sevillenca* and *Empeltre*, which are hard to find outside these lands, which confers personality and authenticity to the landscape.

Another distinctive feature is the low density of plantation, which is approximately 75 olive trees per hectare. In some cases, especially in plantations with ancient olive trees, the olive groves do not follow any plantation design.



The landscapes are not monotonous at all as they have a great variety of colours, textures and nuances with natural beauty. Moreover, they hold great wealth and diversity of species which are a reflection of human activity throughout history which, in turn, has moulded this landscape full of history.





The landscape of olive trees in the *Territorio Sénia* is not homogeneous and, sometimes, the traditional olive growing contrast with the relief of the surrounding mountain ranges.



There are many areas where the olive growing predominates and is known as "the sea of olive trees". Among the light green colour of the olive groves, some carob trees highlight as they are taller and darker.



Furthermore, there are mixed landscapes with olive trees and, generally, almond trees. In the same plot, there can also be carob trees, walnuts or fig trees, especially in the boundaries of the estate.

Finally, there can also be found more diversified landscapes with olive growing and irrigated crops with fruit trees, especially in the area near the coast.

The long history of the olive tree as a crop and the longevity of their plantations, ancient olive trees in some cases, are an index of their ability to remain and be useful throughout time (sustainability). However, this crop as many other traditional ones, has experienced deep changes in the last decades. The landscape of olive trees in the *Territorio Sénia* has evolved and been transformed depending on the time, in spite of its ancestral origins. In recent years, the olive trees have been abandoned, firstly in plains with difficult in mechanization where the olive tree has to compete with pines. In other places, where irrigated crops have been largely transformed, the olive trees have disappeared and been replaced by other crops (especially citrus fruits). By contrast, other areas have planted new crops by replacing vineyards, grain or almond trees.

The aim is to seek a more positive management of changes and evolutions as well as more flexible and holistic. This is not only about preserving or conserving in the strict sense of the word nor even reconstruct landscapes that have disappeared, but also defining the future landscapes as we want to know and inhabit them. Some values of the traditional olive groves must be guaranteed, although they need new approaches, adapted to the current circumstances.



Dry-stone buildings

Other common elements in the whole Territorio Sénia are the dry-stone buildings. These kind of constructions are totally related to agricultural and livestock activities so they are functional buildings. Moreover, they are highlighted both culturally and aesthetically as they can convey values such as the identity and the uniqueness of the territory and show a close relationship between human and nature. Therefore, they have a great heritage value. Likewise, farmers have transformed the territory and overcome physical limitations of environment in order to develop their economic activity.

These buildings can be found not only in mountain areas linked to extensive livestock, which serve as a refuge, but also in coastal and intermediate areas in all kind of crops.



It is considered cultural heritage in which threats are hanging over and endanger its persistence. Some of these threats are the lack of knowledge, the absence of inventories, its modest scale, the lack of maintenance and the consideration of marginal landscape for the purpose of infrastructure and management projects.

The dry-stone heritage constitutes a cultural value of crucial importance and an environmental and economic resource.

The *Mancomunidad Taula del Sénia* made an inventory of dry-stone buildings in the 27 municipalities that are part of it. This inventory was focused on the dry-stone barracks and more than 1.200 buildings were found. Therefore, this was the first step in cataloguing but it is known that there are so many other dry-stone buildings in the territory: wells, “fridges” and thousands of kilometres of stone walls.

The areas with olive trees and, specially, those with presence of ancient olive trees are closely linked to dry-stone buildings. The architecture of stone is the silent and humble witness of our agricultural culture. It is an essential element that shapes the personality of the landscape and the physical expression of human capacity to be adapted to environment.

The dry-stone technique has an important role in the creation of the landscape by providing multiple functions:

1) The dry-stone margins built in slopes serve to bind cropland in terraces, to protect it from erosion and to increase the useful surface.

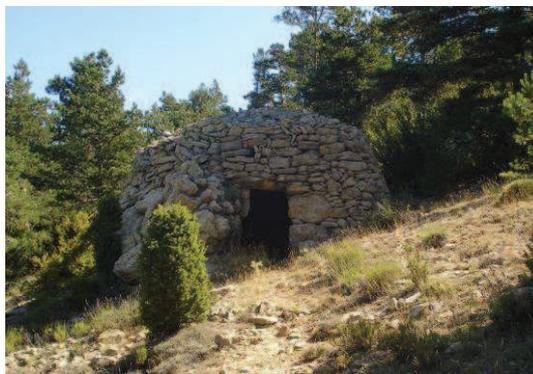
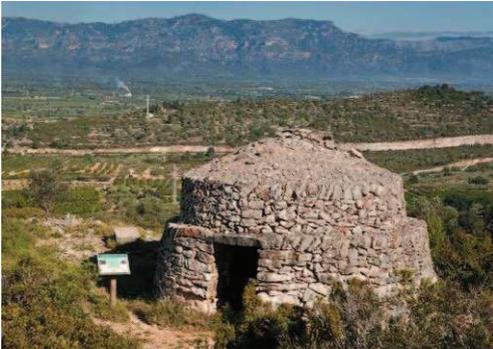
2) The dry stone walls are used as dividing elements between properties as well as to prevent livestock from entering the areas.

3) These areas with dry-stone walls in the slopes of the hillsides act as a barrier to fire by creating a mosaic effect that breaks the continuity of the forest area.

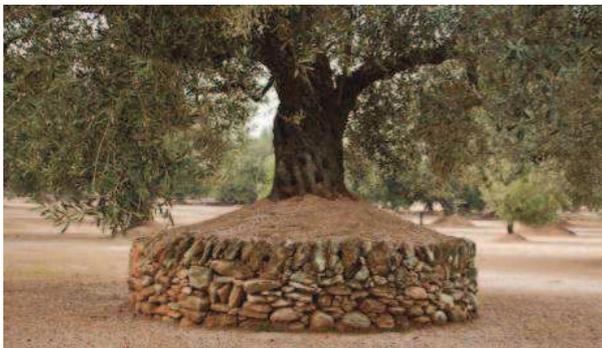
4) The thousand of kilometres of dry-stone walls that create the landscape in this territory are a crucial element for the ecological link between different natural areas and a perfect habitat for the multitude of plants and animals as well. Therefore, these are key components for local biodiversity as great quantity of species live, move, feed or brood in those sites related to dry-stone buildings.



5) The dry-stone barracks served to protect against severe weather. They have the capacity to accommodate the farmer and their family as well as his pack animal (mule or donkey). These buildings were inhabited during the harvest or at a time of intense activity. Furthermore, in mountain areas they were used as a refuge for the shepherds.



6) The "Waloons" are perimeter walls that help reduce the impact of wind. They can be individual or attached to a dry-stone wall.



7) The "Chairs" were separating spaces in a wall in order to plant a tree.



8) Other uses: wells, ditches, lime kilns.



Landscape of ancient olive trees

The landscape of ancient olive trees is full of history. It is a legacy of plantations from many different times: some of them were planted by the Iberians or Romans and most of them during the Muslim age. These olive trees are living witnesses of reigns and people. Moreover, they have suffered frosts and droughts and, more recently, the speculation in their use in gardens as mere decorative objects. It is a cultural landscape which have been carefully cared by successive farmers generations in order to admire their beauty and taste their oil to this day.

The highest concentration of ancient olive trees can be found within the *Territorio Sénia*. There are 4.960 specimens with at least 3.5 meters of perimeter at 1.3 meters from the ground. The dimensions of these trees can reach spectacular measurements, some of them can even exceed the 8 meters of perimeter of trunk. The following table shows the ancient olive trees classified by the measure of their perimeter of trunk at 1.3 meters from the ground.

Range of perimeter of trunk (m)	Number of olive trees
3,5 - 4	2.117
4 - 5	1.960
5 - 6	678
6 - 7	110
7 - 8	78
+ 8	17
Total	4.960

These 4.960 specimens of ancient olive trees are the soul, memory and the support of the rough landscape of olive trees in the *Territorio Sénia*. They constitute an economic, social and educational resource that must contribute to their people's development and welfare. They have an ancient wisdom and have been present in the daily life and the major events of the territory which, in turn, has been inhabited by some of the most important civilizations in the history of humankind. It is amazing to calculate the events that these almost immortal beings have seen in a landscape made of baroquely twisted trunks which have been sculpted by cold, wind and sun.

It is impossible to describe the beauty in all these olive trees, as each one is unique, different, with their own personality due to the vagaries of nature and human action (cultivation, pruning). Until now, 5 specimens have been chosen and all of them have been awarded in different years as the Best Monumental Tree in Spain for the Spanish Association of Municipalities with Olive trees (AEMO). Therefore, they serve as an example of the rest of olive trees within the *Territorio Sénia*.

These awards contribute to population's awareness and make the heritage of the *Territorio Sénia* known, both nationally and internationally.

"Farga del Arión" (Ulldecona), AEMO award 2007.

Olive tree of the variety *Farga* with 1.704 years old, which highlights by its uniqueness and its state of conservation. This olive tree exceed the 8 metres of perimeter of trunk at 1.3 meters from the ground and its base reach the 18 meters of perimeter. It was planted during *Constantino I* emperor times and is the oldest dated tree in the Peninsula and one of the oldest from around the world. In 1997, it was declared monumental tree by the Government of Catalonia. It is set in an estate of 80 hectares and is surrounded by other olive trees. Among them, 391 are included in the inventory as ancient olive trees. There are also some old carob trees, which create an authentic ancient forest. Near this estate, the *Via Augusta* can be found.



"Farga del Arión" Ancient olive tree. AEMO award in 2007.

"Olivo Mater" (Ulldecona), AEMO award 2011.

Olive tree of the variety *Farga* which is situated in the municipality of *Ulldecona*. It is surrounded by 66 olive trees included in the inventory, so they create an authentic monumental landscape. The tree is a work of art as it has a perimeter of trunk of 6.3 meters and has a unique woody root development of great dimensions that form a stunning image like the tree is attached to the land where it was born.



“Mater” ancient olive tree. AEMO award in 2011.

“*Olivo de las Parejas*” (Olive tree of the couples) (*la Jana*) AEMO award in 2014.

The olive tree is highlighted by its majestic trunk in which two branches spring from. It creates a unique stamp due to its thick and twist veins and buds, which are an authentic living work of art which continues to evolve. It is also worth mentioning its large base that comes out of the ground which is such a present for the visitors eyes. Its perimeter of trunk exceed the 6.6 meters and also have an optimum state of conservation in spite its centuries of life. Foliar area is healthy and fruitful, which demonstrates the care this tree has received from several generations. This olive tree can be found in the natural museum of ancient olive trees *Pou del Mas* in *La Jana*, which also owns other 20 trees which are considered ancient olive trees.



“*Olivo de las Parejas*”. AEMO award in 2014.

“*Olivo de las 4 Patas*” (4 legs olive tree) (*Canet lo Roig*). AEMO award in 2016

These olive tree stands out for its majestic and dynamic image as it raises above its four legs and seems to come out from the ground turning on itself. The olive tree is of the variety *Farga* and is located in a unique landscape in a large plain crossed by many rivers where the Roman *Via Augusta* was set. This olive tree is surrounded by more

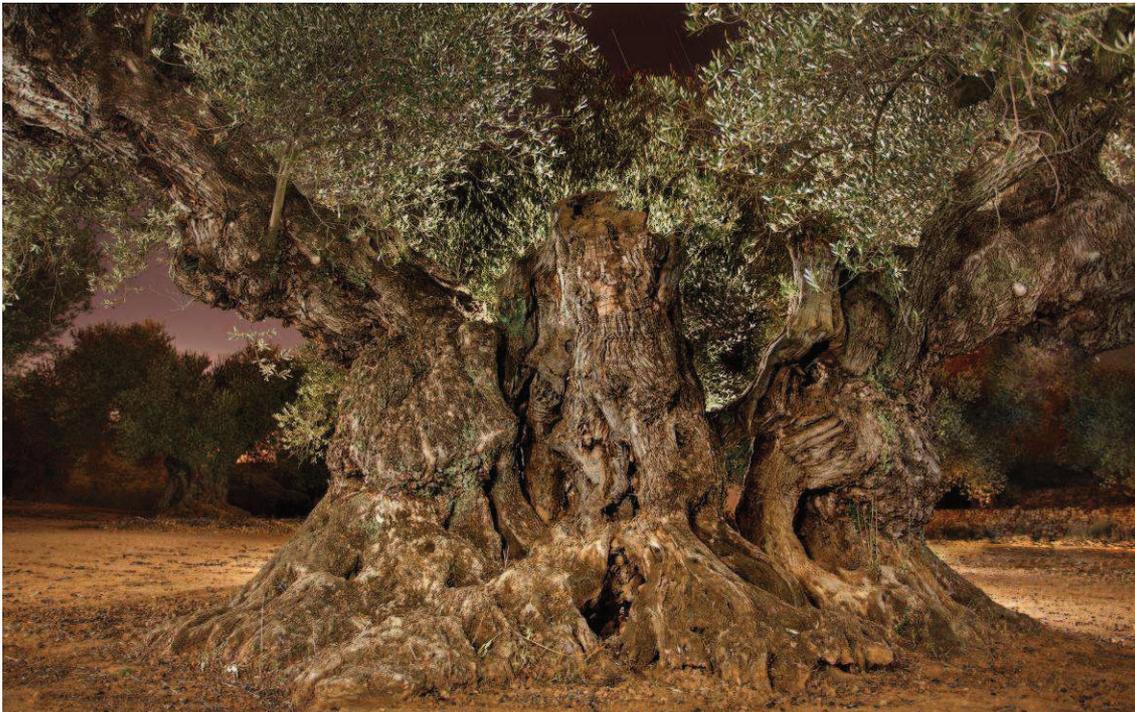
than 200 olive tree also classified as monumental. All of them are located in the *Rajos* heading, which is an authentic orchard of ancient olive trees which have been witnesses of the history.



"4 Patas" ancient olive tree. AEMO award 2016.

"Olivo de Sinfo" (Traiguera), AEMO award in 2018.

It is an olive tree of the variety *Farga* grafted in wild olive tree and is located next to the Roman *Via Augusta* and is surrounded with other monumental specimens. This olive tree is one of the most ancestral in the Iberian Peninsula and, thereby, in the Mediterranean thanks to its dimensions of trunk and unique image. It comes out from the ground with a unique base due to its size and robustness. The trunk is solid and evocative as it creates different shapes and a majestic treetop, which is healthy and is able to produce good harvests century after century.



"de Sinfo" ancient olive tree. AEMO award in 2018.

The landscape of ancient olive trees in the *Territorio Sénia* represented Spain in 2016 in the European Landscape Award of the Council of Europe. Among the 47 countries members, it was awarded with 3 Special Mentions. The jury stood out: "its values as an essential element in management, protection and ordinance policies of the landscape, according to the European Landscape Convention. It has also been considered to make an example due to its approaches in territorial, economic, social, cultural and environmental sustainability. Moreover, the interregional governance implies the cooperation between three different autonomous communities in the same landscape. It has been taken into consideration its dimension dedicated to population's awareness and participation in relation to its values in nature, culture and welfare. Likewise, particular value has been placed on their ability to respond on the decline of such areas, due to the effect of economic tertiarisation. Therefore, thanks to the developed effort between public and private agents, a management model has been created to make the preservation of the ancient olive trees sustainable and an identity symbol of the Mediterranean landscape".

III. ACTION PLAN



II. ACTION PLAN OF THE AGRICULTURAL HERITAGE SYSTEM ANCIENT OLIVE TREES *TERRITORIO SÉNIA*

III.1. Introduction

The action plan of the Agricultural Heritage System Ancient Olive Trees *Territorio Sénia* has its origins in the projects developed throughout these years in order to initiate the preservation and the put on value of these olive trees. Therefore, building on acquired experience, especially in the cooperation between public and private sectors, the system takes their results into consideration, both positive and negative.

In the first place, both challenges and threats have been analysed. From this, the strategy to follow and the initiatives to be developed have been established within the action plan during the next five years (2018-2022).

The establishment of the initiatives has been very exhaustive, as it has been described the seven sections in which have been grouped and the specific programs in each of them.

III.2. Threats

Plunder of the ancient olive trees for ornamental purposes

During the last years of the past century and the beginning of the current one, the plunder was a common activity which raised people awareness. Owners were offered high quantities of money in exchange of cutting down the most monumental olive trees. Then, some of them were transplanted to another estate in an intensive olive growing or citrus fruits plantation. It generated a great loss of the landscape, which together with the monumental olive trees give value and singularity. Although the plunder has decreased progressively, it is a latent threat.

Competence with the intensive exploitation models of the olive groves

The olive groves of traditional varieties of the *Territorio Sénia* with ancient olive trees constitute an extraordinary landscape. However, they have high over-exploitation costs: harder pruning and collection work, and less quantity of harvest. By contrast, intensive production systems and non-native varieties generate lower costs and greater benefits. This is a real threat for the ancient olive trees, which is latent.

Abandonment of some traditional olive groves exploitations

The great majority of olive groves within the territory are small exploitations which cover less than a hectare. Although they are properly cultivated, benefits are not enough for the farmers, due to their increasing costs in an exponential way. Therefore, some of these are abandoned, which create a poor view and is a fire danger.

Ageing and depopulation of the inland municipalities

Both problems happen at the same time. On the one hand, the great majority of farmers is more than 50 years old or even they are at retirement age. On the other hand, depopulation continues to damage the area. In the *Territorio Sénia*, population

has decreased in 5.964 inhabitants, from the 116.985 in 2012 to the 111.021 in 2017, which represent the 5% in only five years. In the inland areas, figures are higher, which means a problem as these could lead to the total abandonment of some municipalities.

Lack of professional qualification and business reputation

Apart from the ageing of the farmers in the *Territorio Sénia*, almost no young people, with middle or higher education, dedicate to this sector. From this, the situation may become worse, as it would be difficult to find solutions for the mentioned problems without any specific education.

Lack of awareness of the values of these ancient olive trees

Some years ago, no one appreciated the landscape, cultural and heritage values that the estates with olive trees of traditional varieties represent in the *Territorio Sénia*, with many monumental or ancient specimens. This fact was also due to the economic efficiency, as it was lower than modern intensive plantations. Nowadays, something is changing, but the danger of abandoning these trees is latent due to economic reasons or lack of awareness.

III.3. Challenges

Awareness of the owners about the value of this unique heritage

The aim is to make people, owners and society aware of the heritage, cultural, environmental and landscape value of the ancient olive trees and their environment as well as their gastronomic, touristic and economic possibilities. This is the challenge.

Protection rules of the ancient olive trees

The Law 4/2006 on tree protection in Valencian Community has been positive to curb the plunder. However, in the case of the olive trees it is important to protect all of them with at least 3.5 meters of perimeter at 1.3 meter from the ground and comply with law in granting financial support to put on value the ancient olive trees and their oil. On the basis of this improved law, the aim is to achieve similar protections for the rest of ancient olive trees within the *Territorio Sénia* and other sites where they are placed.

Different products obtained from traditional varieties of olive trees

Only the 20% of the ancient olive trees are used in certified olive oil production within the Guarantee Mark *Aceite Farga Milenaria*. For this, it is necessary to enlarge the number of olive trees put in production and owners as well in order to make them aware of the benefits of the preservation of these trees. Moreover, olive oil production from single-varieties has to be increased as well: *Farga, Morruda, Sevillena, Empeltre* and others. Another challenge is to produce a coupage olive oil from these varieties which defines the *Territorio Sénia*. Moreover, table olives and other products have to be studied.

Existence of 3 D.O. (Designations of Origin) within the area

Within the *Territorio Sénia*, there are 3 D.O. that embrace all its municipalities. In the Catalan area, there exist the D.O. *Baix Ebre-Montsià* with the varieties *Farga*, *Morruda* and *Sevillenca* while in the Valencian area there is the D.O. *Comunidad Valenciana* with the same three varieties and other ones, as it includes the whole community. In Aragon, there exist the D.O. *Bajo Aragón*, with the variety *Empeltre*. Therefore, the aim is to produce more olive oils included in some of these three D.O.

Recovery of the abandoned estates of olive trees

While some small estates with olive trees are abandoned due to its high costs, there are certain cases of recovery of abandoned estates with ancient olive trees, with positive results. From this, it will be an important challenge to recover other estates with olive trees of traditional varieties and put in production these trees for its positive benefits both economic and environmental.

Possibility of generational renewal of the sector

As consequence of the crisis in construction and furniture, some relatively young people (between 30 and 50 years old) are returning in agricultural works, such as the olive growing. The challenge is to improve results and disseminate the information around the olive trees of traditional varieties in the *Territorio Sénia*, both ancient and the others, in order to become an efficient economic option to enable the generational renewal of the sector.

Professional qualifications and business reputation of the sector

Due to lack of education, both professional and entrepreneurial, in the sector of the olive growing in the *Territorio Sénia*, the challenge is to recruit people with professional qualifications in the sector. It is also needed a basic, practical and specific education for each sector involved in production, elaboration and commercialization of the quality oils in the area.

Awareness of the values of the ancient olive trees and their landscape

The ancient olive trees and their environment: other olive trees of traditional varieties, dry stone margins, specific fauna and flora, singular landscape a unique heritage. All of them constitute one of the most important assets in the *Territorio Sénia*. However, it is important to make people aware of their importance, starting with children and young people and continuing with associations, until European and global institutions appreciate and recognize it.

III.4. The Strategy

The ancient olive trees in the *Territorio Sénia* are in danger due to the threats that have been previously described: the plunder of the ancient olive trees for ornamental purposes, the competence with intensive models of exploitation of the olive growing, the abandonment of exploitation of traditional olive groves, ageing and depopulation of the inland municipalities, the lack of professional qualification and business reputation and the lack of awareness of the values of these ancient olive trees. However, there is a challenge or more for every threat which demonstrates that it is possible to be prepared to minimize them or at least to have a good defined action plan to be implemented immediately. The action plan is described below.

III.5. Responsible parties

In previous sections, all public and private entities and individuals have been mentioned, both managers and collaborators that are working and will probably continue working on the project in the future. These are a great example of the public-private partnership in the System Ancient Olive Trees *Territorio Sénia*.

However, a functioning scheme is needed in order to define the role and responsibilities of each entity within the Globally Important Agricultural Heritage System Ancient Olive Trees *Territorio Sénia*. Leadership or cooperation level in the different stages of the planning system will be explained below.



Mancomunidad Taula del Sénia.

Local public entity which is formed by 27 council from the Valencian Community, Catalonia and Aragon. It was created 12 years ago and works for the interests of its inhabitants. Thanks to the cooperation of private and public sectors it leaders the conservation programme and the put on value of the ancient olive trees within its territory. Therefore, the 27 councils work together and totally coordinated with the *Mancomunidad*, although some of them implement actions at a local level as well. All issues related to ancient olive trees and their oils are managed by the *Mancomunidad*, but all decisions are taken by consensus with the *Asociación*.

Even though there are other entities and individuals that help to achieve positive results of the system, the *Mancomunidad Taula del Sénia* owns the responsibility to all intents and purposes (planification, execution and results). It is possible due to experience gained during years by current management team, who have an adequate knowledge and a total willingness to serve.

Asociación Territorio Sénia.

Private non-profit association which is formed as 50% by the *Mancomunidad* and as 50% by different economic sectors. It is necessary the agreement between the two parties (public and private) in decision-making, regardless of the number of assistants in a meeting. Apart from all the oil mills included in the Guarantee mark, there are also olive trees owners, restaurants and tourist companies, among others, which are part of the *Asociación*.

Local community. On the one hand, the extensive association network of the area is included in this groups: cultural, civic, sporting, environmental entities, among others.

These entities cooperate by participating in the European Heritage Days as well as in festive events related to the ancient olive trees or even sharing their claims against the plunder of some of these specimens.

There are also included the education centres (schools) within the *Territorio Sénia* that participate in an annual contest about a topic related to the territory (ancient olive trees, artisans, dry stone technique). The prize is a trip to the winner of each centre and a guest to a place related to the topic. Moreover, the *Mancomunidad* have been ask for giving talks on the topic of the contest in the education centres.

The Government of Spain, 3 autonomous communities and 3 provincial councils. Public institutions that have committed to support the candidature of this Agricultural Heritage System Ancient Olive Trees *Territorio Sénia* are included in this group. In detail, these institutions are the Ministry of Agriculture, the Ministers for Agriculture from the Valencian Community, Catalonia and Aragon and the presidents of the provincial councils of *Castellón, Tarragona* and *Teruel*.

All groups work to provide funding, from both companies or institutions.

Research centres and others. Following experience gained, close cooperation will continue with agricultural research centres from the 3 autonomous communities (IRTA, IVIA y CITA). There also cooperates the *Fundación Alicia* (leading experts on gastronomy) and others: *Biodiversidad, Dieta Mediterránea* and *Catalunya La Pedrera*. Regarding universities, it is important to note the Polytechnic University of Madrid, the University of *Córdoba* and the IFAPA. Other national entities such as the *Asociación Española Municipios del Olivo*, the *Patrimonio Comunal Olivarero*, or international ones like the International Olive Council also cooperate.

III.6. Action plan 2018-2022

III.6.1. Preservation and put on value of the ancient trees and their oil

Campaigns for the awareness of farmers, institutions and society

To study, planning and carry out campaigns focused on the owners of the ancient olive trees, different institutions and society in order to make them aware about the importance of this heritage, which is agricultural, historic, cultural, landscape, environmental, gastronomic and touristic.

Recovery actions and put on value the abandoned ancient olive trees

Bearing in mind some previous experiences, it is necessary to carry out information campaigns on the recovery and the put on value the estates with abandoned olive trees of traditional varieties, even there is no presence of ancient olive trees. Therefore, projects must be explained in order to new producers could be able to produce high quality olive oil.

Actions focused on the protection of all ancient olive trees

According to the existent protection rules, it is necessary to decide which ones are the best to achieve an enough protection level to the ancient olive trees, both inside and outside the area.

Studies about olive oils of the *Territorio Sénia*: profitability, market and gastronomy

Bearing in mind the projects already developed, it is necessary to carry out new studies on the costs and profitability of different olive oils (ancient, single-variety, coupages), the current and future markets, gastronomy, health, etc.

III.6.2. Improvements in the quality and the put on value of the olive oils within the *Territorio Sénia*

Specific education for each sector involved in the olive oil production

Bearing in mind the previous experience and after all possibilities have been taken into consideration, an education plan for each productive sector will be developed: olives producers, olive oil producers (technicians and staff of the oil mills and packing plants), commercials, etc.

Manual of best practices for the olive oil production process

There is a written (from *Columela* and *Abu Zacaria* to our time) and oral (from old and younger people) tradition that, in cooperation with technicians and experts, will serve to create a manual of best practices for the high-quality olive oil production process in the *Territorio Sénia*. It will be able to be used within the area, but also in other places with similar situations.

Studies on the gastronomy of the single-variety olive oils

The olive oils of traditional varieties in the *Territorio Sénia* (*Farga*, *Morruda*, *Sevillenca*, *Empeltre* and other minority ones) have distinctive characteristics, both at a quality and gastronomic level. Therefore, in order to enrich the offer of quality oils, some studies on their application to gastronomy must be carried out.

Qualitative and gastronomic studies on the coupage premium olive oil

Apart from the olive oil from ancient olive trees (certified by the Guarantee Mark) and the single-variety ones described in the previous section, it is to be produced a controlled coupage olive oil of traditional varieties, which will define the *Territorio Sénia*. It must be studied properly, both its quality and gastronomy, in cooperation with the olive mills in order to be launched progressively.

III.6.3. Dissemination and promotion of the olive trees and their oil

Events: Congress on the ancient olive trees, World Olive Day

Taking into consideration the experience of the previous 7 congresses already performed, an annual congress on the ancient olive trees and their olive oils will be celebrated at the end of November.

The World Olive Day is celebrated every year in 24 November. In 2017, the IOC (International Olive Council) chose the proposal by the *Territorio Sénia* to celebrate this Day in Spain, but it will continue to be held every year.

Dissemination and knowledge exchange with professionals and institutions

Fruit of the acquired experience, there has always been a close cooperation with professionals and research centres worldwide in order to disseminate and exchange knowledge about the ancient olive trees, their preservation and their put on value that will be transmitted to the Government and other Spanish (provincial, autonomic and state) and global (European Union, Council of Europe, IOC, FAO) institutions.

Publications and dissemination campaigns

Nowadays, the book “Ancient Olive Trees *Territorio Sénia*” is being prepared, which will be as complete as possible and will include the history, pictures of the ancient olive trees and the landscape, recipes of the best restaurants in the area, museums and oleotourism, letters of public personalities, ... Moreover, there will be other massive publications such as leaflets.

Due to the lack of resources, promotion is one of the greatest necessities nowadays. Therefore, dissemination campaigns of the oils in this territory are needed in both large communication media and specialised publications. Once this System is approved, these dissemination campaigns are expected to be carried out.

Dissemination of the olive oils: tastings in schools, exhibitions, markets and workshops.

Although some of these activities were started many years ago, they need to be promoted and even initiate new ones. For example, the tasting of olive oils from the territory in their schools, as it is one of the best ways to approach families. The olive oils will also be disseminated in exhibitions, public markets and tastings in different workshop.

III.6.4. Oleotourism: museums, areas and paths of ancient olive trees

Planned and sustainable expansion of the current network

After some years of intense work, different collaborations and agreements have been carried out with the owners of the states. It has been enabled 2 museums, 12 areas and some paths of ancient olive trees. Now, the aim is to complete this network, always with the agreement of the owners and councils, especially in those municipalities without any enabled area. It will be taken into consideration that the areas must be accessible to disabled people.

Creation of touristic products around the ancient olive trees

In cooperation with Tourism Departments of Valencian Community and Catalonia, projects on touristic products have started to be developed. The aim is that companies from different sectors create touristic products around the ancient olive trees: tourism, oil mills, restaurants and others.

New events: music, drama, anniversary celebrations, *Olea europaea* festivity

The objective is to continue celebrating some civic activities and festivities (*Olea* festivity). Furthermore, events will be extended such as music actuations, drama, poesy within the environment of the ancient olive trees. Festive and popular events are also being developed such as anniversary celebrations of the dated olive trees with more than 1.000 years old, among other activities.

Authorised national and international visits and public figures

The experiences in both making people aware and dissemination in media have shown positive results. Therefore, if the system is recognised as a GIAHS, there will be more visits of national and international authorities and public figures. Moreover, there will also be Fam Trip for travel agencies, great chefs and opinion leaders.

III.6.5. Other economic sectors of the territory

New products related to the olive trees

Apart from all their olive oils, projects will also be focused on other products related to the olive trees in the area. For example, the table traditional olives, olive paste, bread and special pastes as well as handicraft and cosmetic products.

Working sessions and cooperation agreements between different sectors

Although the sector of the olive oil from ancient olive trees is one of the attractants of the *Territorio Sénia*, it is also important the interaction with as many sectors as possible, such as gastronomy, restaurants, tourism and commerce. Agreements are expected to be achieved, after some working sessions.

Other agricultural products of the *Territorio Sénia*

Apart from the olive grove, which is the main crop within the territory, there are also other crops such as citrus fruits, artichokes and fruit trees. Moreover, there is livestock as well: poultry, pigs, rabbits, sheep and bovine. Development and improvement possibilities will be studied with a starting point in the actual reality and comparing them with other successful experiences in other areas.

Interaction with other heritage resources of the territory

Apart from the ancient olive trees and their environment, there exist other outstanding heritage: historic (dinosaurs, cave paintings, Iberians, Medieval Age, *Carlists* and *Maquis*), environmental (*Delta del Ebro*, *los Puertos* and mountain areas, intermediate plains), festive and traditional, gastronomic... Therefore, it is necessary the interaction of all of them.

III.6.6. Ageing and depopulation in inland areas

Problems in inland and mountain areas, depopulation

Within the *Territorio Sénia*, both the area with ancient olive trees and mountain areas present serious problems of ageing and depopulation. From this, similar experiences with successful results have been studied and it is worth mentioning the Highlands of Scotland (HIE, Highlands and Islands Enterprise).

In cooperation with autonomous and provincial governments, the reality in the most affected areas, the experience in HIE and other successful stories will be studied in order to find solutions and possible lines of action in the future.

Other possible lines of action

Following the approach described above, new lines of action will be included in this section of the action plan depending on the conclusions drawn from the study (it is not possible to evaluate them now as the results of the study are unknown). New financial resources will be sought in order to carry out them.

Studies on the forest management, communal areas

In the mountain area of the *Territorio Sénia* there is no presence of olive trees due to its height and weather. However, this area is affected by forest management and communal areas, among others. From this, these topics will be studied in cooperation with the population and institutions, in order to establish the baselines for the future.

III.6.7. Cooperation with other sites and dissemination of the GIAHS

International cooperation

The GIAHS Ancient Olive Trees *Territorio Sénia* will be developed in its agricultural side with farmers and technicians from different countries: Italy, Portugal, Greece, Palestine, among others. Moreover, groups from France, Italy, Romania and others will contribute in the line of cooperation and heritage.

Exchange with other GIAHS

Apart from the *Valle Salado de Añana* and the *Axarquía* in Spain, we find really interesting the *Barroso* (Portugal) and *Asís* (Italy) sites, especially the last one as it consists of olive trees. The aim is to establish contact with them by e-mail at first. Obviously, everyone who write us will be answered.

Dissemination of the concept of GIAHS

If, as we hope, the FAO recognises the Agricultural Heritage System Ancient Olive Trees *Territorio Sénia*, the *Mancomunidad* together with all social partners organisations will massively disseminate the concept of GIAHS and what it represents to the systems which have already been recognised.

Promotion of the concept of GIAHS to other sites

The concept of GIAHS was totally unknown for us until we were invited to an Informative day by the Ministry of Agriculture upon the suggestion of the delegate of Spain in FAO (*Antonio Flores*). After submitting the candidacy and making the appropriate corrections, we will invest our effort in disseminating and promoting the concept of GIAHS to future candidates if our system is recognised.

III.6.8. Information and communication technologies, social networks

Website and Mobile applications

It has been created a website with content related to the System, which makes the resources (olive oil, gastronomy and tourism) accessible and allows all devices to connect. The website contain three-dimensional spaces and users are able to access the information in the basis of their geographic location.

Creation of a global centre of ancient olive trees (virtual)

By taking advantage of the existent resources and the development of this action plan, it is expected to start up a global centre of ancient olive trees (virtual). It will contain especially pictures (photographs, videos, ...) but also documents, studies and works related to the olive trees.

Activity in communication media and social networks

In this globalised world, media are becoming more and more important. Media will be informed, previously and after, of the performance of the events in order to be disseminated. The use of social networks will also be used to achieve a wider dissemination quickly.

Workshops for influencers

Given the relevance of this public figures nowadays and their positive results, the most adequate influencers will participate in workshops related to the olive trees and especially prepared for them, similar to the Fam Trip.

III.7. Schedule of activities of the Action Plan

ACTIVITY	2018	2019	2020	2021	2022
III.6.1. Preservation and put on value of the ancient olive trees					
Campaigns of awareness of farmers, institutions					
Recovery actions and put on value of the olive trees					
Actions to protect the ancient olive trees					
Studies about the olive oils in Territorio Sénia					
III.6.2. Improvements on quality and the put on value of olive oil					
Specific education for each sector involved in the olive oil production					
Manual of best practices for the olive oil production process					
Studies on the gastronomy of the single-variety olive oils					
Studies on the coupage premium olive oil					
III.6.3. Dissemination and promotion of the ancient olive trees					
Events: Congress Ancient Olive Trees, World Olive Day					
Dissemination and exchange of knowledge					
Publications and promotion campaigns					
Dissemination of the olive oil: tastings in schools					
III.6.4. Oleotourism: museums, areas and paths					
Planned and sustainable expansion of the current network					
Creation of new touristic products					
New events: music, drama, festivities					
Visits of authorities and public figures					
III.6.5. Other economic sectors in the territory					
New products related to the olive trees					
Working sessions and cooperation agreements					
Other agricultural products in the <i>Territorio Sénia</i>					
Other heritage resources in the territory					
III.6.6. Ageing and depopulation					
Problems in mountain areas					
Other possible lines of action					
Studies on the forest management, communal areas					
III.6.7. Cooperation with others and GIAHS promotion					
International cooperation					
Exchange with other GIAHS					
Dissemination of the GIAHS concept					
Promotion of the GIAHS concept to other sites					
III.6.8. TIC and social networks					

In order to complete the funding of the project on the Ancient olive trees, the councils contribute with 20.000 annual euros while the oil mills which are part of the *Asociación* contribute with 25.000 euros.

Aid commitment has been asked to Ministry of Agriculture in Valencian Community, Catalonia and Aragon and the Provincial Councils in *Castellón*, *Tarragona* and *Teruel* in order to help funding the Action Plan. This year, the 3 provincial councils help with a total of 43.500 euros, and 160.000 euros have been required to the 3 autonomous communities. In this section of Institutional Contributions, it is expected to receive other aids, both private (Foundations and particular companies) and public (national and European institutions and other Departments of the three autonomous communities).

The *Mancomunidad Taula del Sénia* has prepared the following Economic Management Plan for the period 2018 – 2022, in which the own resources derive from the *Mancomunidad*, councils and oil mills and Institutional Contributions are the sum of all institutions described in the previous paragraph (Autonomous communities, Provincial Councils and others).

Funding sources of the action plan 2018 - 2022						
Origin of funds	2018	2019	2020	2021	2022	Total
<i>Mancomunidad Taula Sénia</i>	90.000	90.000	95.000	95.000	100.000	470.000
Councils, <i>Asociación</i>	40.000	45.000	45.000	50.000	50.000	230.000
Institutions	245.000	250.000	250.000	250.000	260.000	1.255.000
Total resources	375.000	385.000	390.000	395.000	410.000	1.955.000

Action Plan 2018 - 2022						
Chapters	2018	2019	2020	2021	2022	Total
1. Preservation	375.000	385.000	390.000	395.000	410.000	1.955.000
2. Quality improvements						
3. Dissemination and promotion						
4. Oleotourism						
5. Other sectors						
6. Ageing						
7. GIAHS cooperation						
8. TIC and social networks						

In conclusion, each of the Actions included in the 8 chapters of this Action Plan 2018 – 2022 are expected to be funded by the total contributions, which are the sum of the own resources (*Mancomunidad*, councils and *Asociación*) and the institutional contributions.

III.10. Monitoring and evaluation of the GIAHS

As it has been mentioned in the end of the section II.2.4. when describing social organisations, a Monitoring and evaluation commission of this GIAHS will be created. It will be chaired by the President of the *Mancomunidad Taula del Sénia* or a person delegated by him and the rest of the members in order to evaluate the actions.

In the 2 annual planned meetings, the level of execution of each action described in the 8 chapters of the Action Plan 2018-2022 will be evaluated. The most appropriated indicators for each action will be used and are described below.

In the first column on the left in the table, there are described 31 activities to be developed which are grouped in 8 chapters.

In the right section of the table there are the following 4 columns: “period”, “number”, “report” and “study”:

- “period” refers to the period semi-annual (S) or annual (A) in which the evaluation will be developed.
- “number” is the number of activities that must be described.
- “report” is the report on the activity.
- “study” is the study that must be done in each activity.

INDICATORS FOR THE EVALUATION OF GIAHS				
ACTIVITY	period	number	report	study
III.6.1. Preservation and put on value of the ancient olive trees				
Campaigns of awareness of farmers, institutions	S			
Recovery actions and put on value of the olive trees	A			
Actions to protect the ancient olive trees	A			
Studies about the olive oils in Territorio Sénia	A			
III.6.2. Improvements on quality and the put on value of olive oil				
Specific education for each sector involved in the olive oil production	S			
Manual of best practices for the olive oil production process	A			
Studies on the gastronomy of the single-variety olive oils	A			
Studies on the coupage premium olive oil	A			
III.6.3. Dissemination and promotion of the ancient olive trees				
Events: Congress Ancient Olive Trees, World Olive Day	S			
Dissemination and exchange of knowledge	A			
Publications and promotion campaigns	S			
Dissemination of the olive oil: tastings in schools	S			
III.6.4. Oleotourism: museums, areas and paths				
Planned and sustainable expansion of the current network	A			
Creation of new touristic products	A			
New events: music, drama, festivities	S			
Visits of authorities and public figures	S			
III.6.5. Other economic sectors in the territory				
New products related to the olive trees	A			
Working sessions and cooperation agreements	S			
Other agricultural products in the <i>Territorio Sénia</i>	S			
Other heritage resources in the territory	S			
III.6.6. Ageing and depopulation				
Problems in mountain areas	A			
Other possible lines of action	A			
Studies on the forest management, communal areas	A			
III.6.7. Cooperation with others and GIAHS promotion				
International cooperation	S			
Exchange with other GIAHS	S			
Dissemination of the GIAHS concept	S			
Promotion of the GIAHS concept to other sites	S			
III.6.8. TIC and social networks				
Website and mobile applications	S			
Creation of a global centre of ancient olive trees (virtual)	A			
Activity in communication media and social networks	S			
Workshops for influencers	A			

ANNEX I

Letters of support and aid commitment from the following institutions:

Ministry of Agriculture (The Government of Valencian Community)
Ministry of Agriculture(The Government of Catalonia)
Ministry of Agriculture(The Government of Aragon)
Provincial Council of *Castellón*
Provincial Council of *Tarragona*
Provincial Council of *Teruel*





Desde el Gobierno de la Comunidad Valenciana hemos colaborado en distintas ocasiones con la Mancomunidad Taula del Sénia y la Asociación Territorio Sénia, instituciones que lideran el programa OLIVOS MILENARIOS TERRITORIO SÉNIA, del que forman parte 15 municipios del norte de la provincia de Castellón: Benicarló, Càlig, Canet lo Roig, Castell de Cabres, Cervera del Maestre, Herbés, la Jana, Morella, la Pobla de Benifassà, Rossell, San Rafael del Río, Sant Jordi, Traiguera, Vallibona y Vinaròs, 9 del sur de la de Tarragona: Alcanar, Freginals, la Galera, Godall, Mas de Barberans, Sant Carles de la Ràpita, Santa Bàrbara, la Sénia y Ulldesona, y 3 del este de la de Teruel: Beceite/Beseit, Peñarroya/Pena-roja de Tastavins y Valderrobres/Vall de Roures.

En la actualidad, en el llamado Territorio Sénia (27 municipios: 15 valencianos, 9 catalanes y 3 aragoneses, situados en el punto de encuentro de Aragón, Cataluña y la Comunidad Valenciana), existe la mayor concentración de olivos milenarios del mundo: unos 5.000 de más de 3,5 m de perímetro de tronco a 1,3 m del suelo.

En diez años, trabajando juntos sectores públicos y privados de la zona y con la ayuda de otras administraciones, se ha conseguido poner en valor este patrimonio excepcional, obteniéndose estos resultados: concienciación de los propietarios, mejora de la producción de todos los aceites: de olivos milenarios, monovarietales o en coupage, colaboración con la restauración y el turismo de la zona, museos naturales, áreas y caminos de olivos milenarios, exposición y publicaciones, premios importantes a nivel español y europeo, etc. El futuro es esperanzador.

Impulsada por la Mancomunidad Taula del Sénia, en total colaboración con la Asociación Territorio Sénia, se está elaborando la candidatura '**Olivos milenarios Territorio Sénia**' para su reconocimiento como GIAHS-SIPAM (Sistemas Importantes del Patrimonio Agrícola Mundial) por la FAO (Organización de Alimentación y Agricultura), uno de los organismos especializados de la ONU, y para avalarla y darle mayores garantías se ha pedido todo el apoyo posible de todas las Administraciones del Territorio Sénia.

Es por ello que, tras las positivas experiencias de colaboración que hemos tenido, de nuevo manifestamos la total predisposición del Gobierno de la Comunidad Valenciana a apoyar esta candidatura y ayudar a materializarla, en la medida de sus posibilidades, una vez se conozca el Plan de acción del Sistema agrícola '**Olivos milenarios Territorio Sénia**'.

Valencia, 1 de junio de 2018

La Consellera de Agricultura, Medio Ambiente,
Cambio Climático y Desarrollo Rural

Elena Cebrián Calvo



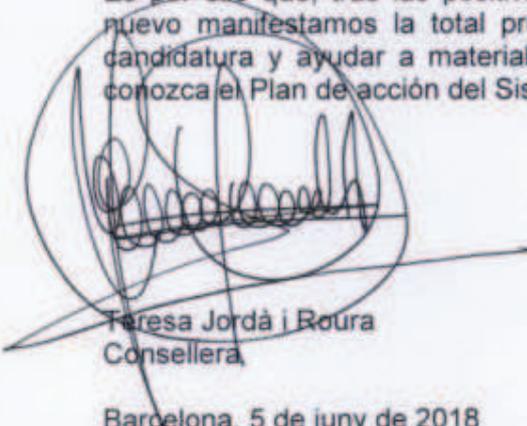
Desde el Gobierno de Cataluña hemos colaborado en distintas ocasiones con la Mancomunidad Taula del Sénia y la Asociación Territorio Sénia, instituciones que lideran el programa OLIVOS MILENARIOS TERRITORIO SÉNIA, del que forman parte 15 municipios del norte de la provincia de Castellón: Benicarló, Cáliz, Canet lo Roig, Castell de Cabres, Cervera del Maestre, Herbés, la Jana, Morella, la Pobla de Benifassà, Rossell, San Rafael del Río, Sant Jordi, Traiguera, Vallibona y Vinaròs, 9 del sur de la de Tarragona: Alcanar, Freginals, la Galera, Godall, Mas de Barberans, Sant Carles de la Ràpita, Santa Bàrbara, la Sénia y Uldecona, y 3 del este de la de Teruel: Beceite/Beseit, Peñarroya/Pena-roja de Tastavins y Valderrobres/Vall de Roures.

En la actualidad, en el llamado Territorio Sénia (27 municipios: 15 valencianos, 9 catalanes y 3 aragoneses, situados en el punto de encuentro de Aragón, Cataluña y la Comunidad Valenciana), existe la mayor concentración de olivos milenarios del mundo: unos 5.000 de más de 3,5 m de perímetro de tronco a 1,3 m del suelo.

En diez años, trabajando juntos sectores públicos y privados de la zona y con la ayuda de otras administraciones, se ha conseguido poner en valor este patrimonio excepcional, obteniéndose estos resultados: concienciación de los propietarios, mejora de la producción de todos los aceites: de olivos milenarios, monovarietales o en coupage, colaboración con la restauración y el turismo de la zona, museos naturales, áreas y caminos de olivos milenarios, exposición y publicaciones, premios importantes a nivel español y europeo, etc. El futuro es esperanzador.

Impulsada por la Mancomunidad Taula del Sénia, en total colaboración con la Asociación Territorio Sénia, se está elaborando la candidatura '**Olivos milenarios Territorio Sénia**' para su reconocimiento como GIAHS-SIPAM (Sistemas Importantes del Patrimonio Agrícola Mundial) por la FAO (Organización de Alimentación y Agricultura), uno de los organismos especializados de la ONU, y para avalarla y darle mayores garantías se ha pedido todo el apoyo posible de todas las Administraciones del Territorio Sénia.

Es por ello que, tras las positivas experiencias de colaboración que hemos tenido, de nuevo manifestamos la total predisposición del Gobierno de Cataluña a apoyar esta candidatura y ayudar a materializarla, en la medida de sus posibilidades, una vez se conozca el Plan de acción del Sistema agrícola '**Olivos milenarios Territorio Sénia**'.



Tàrrés Jordà i Roura
Consellera

Barcelona, 5 de juny de 2018

Desde el Gobierno de Aragón hemos colaborado en distintas ocasiones con la Mancomunidad Taula del Sénia y la Asociación Territorio Sénia, instituciones que lideran el programa OLIVOS MILENARIOS TERRITORIO SÉNIA, del que forman parte 15 municipios del norte de la provincia de Castellón: Benicarló, Càlig, Canet lo Roig, Castell de Cabres, Cervera del Maestre, Herbés, la Jana, Morella, la Pobla de Benifassà, Rossell, San Rafael del Río, Sant Jordi, Traiguera, Vallibona y Vinaròs, 9 del sur de la de Tarragona: Alcanar, Freginals, la Galera, Godall, Mas de Barberans, Sant Carles de la Ràpita, Santa Bàrbara, la Sénia y Ulldecona, y 3 del este de la de Teruel: Beceite/Beseit, Peñarroya/Pena-roja de Tastavins y Valderrobres/Vall de Roures.

En la actualidad, en el llamado Territorio Sénia (27 municipios: 15 valencianos, 9 catalanes y 3 aragoneses, situados en el punto de encuentro de Aragón, Cataluña y la Comunidad Valenciana), existe la mayor concentración de olivos milenarios del mundo: unos 5.000 de más de 3,5 m de perímetro de tronco a 1,3 m del suelo.

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Impulsada por la Mancomunidad Taula del Sénia, en total colaboración con la Asociación Territorio Sénia, se está elaborando la candidatura 'Olivos milenarios Territorio Sénia' para su reconocimiento como GIAHS-SIPAM (Sistemas Importantes del Patrimonio Agrícola Mundial) por la FAO (Organización de Alimentación y Agricultura), uno de los organismos especializados de la ONU, y para avalarla y darle mayores garantías se ha pedido todo el apoyo posible de todas las Administraciones del Territorio Sénia.

Por todo ello, manifestamos el apoyo del Gobierno de Aragón a la candidatura de 'Olivos milenarios Territorio Sénia'.

Zaragoza, 30 de mayo de 2018

EL CONSEJERO DE
DESARROLLO RURAL Y SOSTENIBILIDAD

Joaquín Olona Blasco





El Presidente Javier Moliner Gargallo

Desde la Diputación de Castellón hemos colaborado en distintas ocasiones con la Mancomunidad Taula del Sénia y la Asociación Territorio Sénia, instituciones que lideran el programa OLIVOS MILENARIOS TERRITORIO SÉNIA, del que forman parte 15 municipios del norte de la provincia de Castellón: Benicarló, Càlig, Canet lo Roig, Castell de Cabres, Cervera del Maestre, Herbés, la Jana, Morella, la Pobla de Benifassà, Rossell, San Rafael del Río, Sant Jordi, Traiguera, Vallibona y Vinaròs, 9 del sur de la de Tarragona: Alcanar, Freginals, la Galera, Godall, Mas de Barberans, Sant Carles de la Ràpita, Santa Bàrbara, la Sénia y Ulldecona, y 3 del este de la de Teruel: Beceite/Beseit, Peñarroya/Pena-roja de Tastavins y Valderrobres/Vall de Roures.

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Impulsada por la Mancomunidad Taula del Sénia, en total colaboración con la Asociación Territorio Sénia, se está elaborando la candidatura '**Olivos milenarios Territorio Sénia**' para su reconocimiento como GIAHS-SIPAM (Sistemas Importantes del Patrimonio Agrícola Mundial) por la FAO (Organización de Alimentación y Agricultura), uno de los organismos especializados de la ONU, y para avalarla y darle mayores garantías se ha pedido todo el apoyo posible de todas las Administraciones del Territorio Sénia.

Es por ello que, tras las positivas experiencias de colaboración que hemos tenido, de nuevo manifestamos la total predisposición de la Diputación de Castellón a apoyar esta candidatura y a ayudar a materializarla, en la medida de nuestras posibilidades, una vez se conozca el Plan de acción del Sistema agrícola '**Olivos milenarios Territorio Sénia**'.

Castellón, a 24 de mayo de 2018.

EL PRESIDENT DE LA DIPUTACIÓ DE TARRAGONA
Josep Poblet i Tous

Sr. Iván Sánchez Cifré
Presidente de la Mancomunidad Taula del Sénia
Morella

Apreciado amigo,

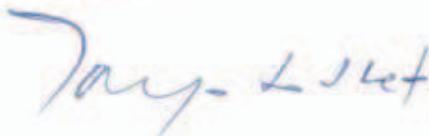
Desde la Diputación de Tarragona hemos colaborado en distintas ocasiones con la Mancomunidad Taula del Sénia y la Asociación Territorio Sénia, instituciones que lideran el programa OLIVOS MILENARIOS TERRITORIO SÉNIA, del que forman parte 15 municipios del norte de la provincia de Castellón: Benicarló, Cáliz, Canet lo Roig, Castell de Cabres, Cervera del Maestre, Herbés, la Jana, Morella, la Pobla de Benifassà, Rossell, San Rafael del Río, Sant Jordi, Traiguera, Vallibona y Vinaròs, 9 del sur de la de Tarragona: Alcanar, Freginals, la Galera, Godall, Mas de Barberans, Sant Carles de la Ràpita, Santa Bàrbara, la Sénia y Ulldesona, y 3 del este de la de Teruel: Beceite/Beseit, Peñarroya/Pena-roja de Tastavins y Valderrobres/Vall de Roures.

En la actualidad, en el llamado Territorio Sénia (27 municipios: 15 valencianos, 9 catalanes y 3 aragoneses, situados en el punto de encuentro de Aragón, Cataluña y la Comunidad Valenciana), existe la mayor concentración de olivos milenarios del mundo: unos 5.000 de más de 3,5 m de perímetro de tronco a 1,3 m del suelo.

En diez años, trabajando juntos sectores públicos y privados de la zona y con la ayuda de otras administraciones, se ha conseguido poner en valor este patrimonio excepcional, obteniéndose estos resultados: concienciación de los propietarios, mejora de la producción de todos los aceites: de olivos milenarios, monovarietales o en coupage, colaboración con la restauración y el turismo de la zona, museos naturales, áreas y caminos de olivos milenarios, exposición y publicaciones, premios importantes a nivel español y europeo, etc. El futuro es esperanzador.

Impulsada por la Mancomunidad Taula del Sénia, en total colaboración con la Asociación Territorio Sénia, se está elaborando la candidatura '**Olivos milenarios Territorio Sénia**' para su reconocimiento como GIAHS-SIPAM (Sistemas Importantes del Patrimonio Agrícola Mundial) por la FAO (Organización de Alimentación y Agricultura), uno de los organismos especializados de la ONU, y para avalarla y darle mayores garantías se ha pedido todo el apoyo posible de todas las Administraciones del Territorio Sénia. Es por ello que, tras las positivas experiencias de colaboración que hemos tenido, de nuevo manifestamos la total predisposición de la Diputación de Tarragona a apoyar esta candidatura.

Recibe un saludo cordial.



Josep Poblet i Tous
Tarragona, 28 de Mayo de 2018



Diputación de Teruel

Desde la Diputación Provincial de Teruel hemos colaborado en distintas ocasiones con la Mancomunidad Taula del Sénia y la Asociación Territorio Sénia, instituciones que lideran el programa OLIVOS MILENARIOS TERRITORIO SÉNIA, del que forman parte 15 municipios del norte de la provincia de Castellón: Benicarló, Cáliz, Canet lo Roig, Castell de Cabres, Cervera del Maestre, Herbés, la Jana, Morella, la Pobla de Benifassà, Rossell, San Rafael del Río, Sant Jordi, Traiguera, Vallibona y Vinaròs, 9 del sur de la provincia de Tarragonas: Alcanar, Freginals, la Galera, Godall, Mas de Barberans, Sant Carles de la Ràpita, Santa Bàrbara, la Sénia y Ulldescona, y tres del este de Teruel: Beceite, Peñarroya de Tastavins y Valderrobres.

En la actualidad, en el llamado Territorio Sénia compuesto por 27 municipios: 15 valencianos, 9 catalanes y 3 aragoneses, donde existe la mayor concentración de olivos milenarios del mundo: unos 5000 de 3,5 m de perímetro de tronco a 1,3m del suelo.

En diez años, trabajando juntos sectores públicos y privados de la zona y con la ayuda de otras administraciones, se ha conseguido poner en valor este patrimonio excepcional, obteniéndose como resultados la concienciación de los propietarios, la mejora de la producción de todos los aceites: de olivos milenarios, monovarietales o en coupage, la colaboración con la restauración y el turismo de la zona, museos naturales, áreas y caminos de olivos milenarios, exposiciones y publicaciones, la obtención de premios a nivel español y europeo, etc. El futuro es esperanzador.

Impulsada por la Mancomunidad Taula del Sénia, en total colaboración con la Asociación Territorio Sénia, se está elaborando la candidatura "**Olivos milenarios Territorio Sénia**" para su reconocimiento como GIAHS-SIPAM (Sistemas Importantes del Patrimonio Agrícola Mundial) por la FAO (Organización de Alimentación y Agricultura), uno de los organismos especializados de la ONU, y para avalarla y darle mayores garantías se ha pedido todo el apoyo posible de todas las Administraciones del Territorio Sénia.

Es por ello que, tras las positivas experiencias de colaboración que hemos tenido, de nuevo manifestamos la total predisposición de la Diputación de Teruel para apoyar esta candidatura y ayudar a materializarla, en la medida de nuestras posibilidades, una vez se conozca el Plan de acción del Sistema agrícola "**Olivos milenarios Territorio Sénia**".

El Presidente,

Ramón Millán Piquer



En Teruel, 24 de Mayo de 2018

ANNEX II

Listing fauna and flora.

Genotype study of monumental olive trees





NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE ES0000465
SITENAME L'Alt Maestrat, Tinença de Benifassà, Turmell i Vallivana

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- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS](#)
- [6. SITE MANAGEMENT](#)
- [7. MAP OF THE SITE](#)

1. SITE IDENTIFICATION

1.1 Type A	1.2 Site code ES0000465	Back to top
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1.3 Site name

L'Alt Maestrat, Tinença de Benifassà, Turmell i Vallivana

1.4 First Compilation date 2009-06	1.5 Update date 2009-06
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1.6 Respondent:

Name/Organisation: Conselleria d'Infraestructures, Territori i Medi Ambient. Generalitat Valenciana
Address: Ciutat Administrativa 9 D'Octubre-Torre 1. C/ Castán Tobeñas, 77. 46018 Valencia (España)
Email: nebot_jos@gva.es

1.7 Site indication and designation / classification dates

Date site classified as SPA:	2000-05
National legal reference of SPA designation	Acuerdo de 5 de junio de 2009, del Consell, de ampliación de la Red de Zonas de Especial Protección para las Aves (ZEPA) de la Comunitat Valenciana. (DOCV num 6031, de 09.06.2009) y Acuerdo de 27 de noviembre de 2009, del Consell, de corrección de errores en los anexos I y II del Acuerdo de 5 de junio, del Consell, de ampliación de la Red de Zonas de Especial Protección para las Aves (ZEPA) de la Comunitat Valenciana. (DOCV num 6155 de 30.11.2009)

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude

-0.0044

Latitude

40.5525

2.2 Area [ha]:

96483.61

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code

Region Name

ES52

Comunidad Valenciana

2.6 Biogeographical Region(s)

Mediterranean (0.0
%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment		
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C	
						Representativity	Relative Surface	Conservati
3140			964.8361		G	A	C	A
3250			964.8361		G	B	C	B
3280			964.8361		G	B	C	B
4090			2894.5083		G	B	C	B
5110			2894.5083		G	B	C	B
5210			4824.1804999999995		G	B	C	B
5330			964.8361		G	A	C	A

6110		964.8361			G	A		C	A
6170		1929.6722			G	B		A	B
6220		964.8361			G	A		C	A
6420		964.8361			G	A		C	A
6430		964.8361			G	A		C	A
7220		964.8361			G	A		C	A
8130		964.8361			G	B		C	B
8210		1929.6722			G	B		C	B
9180		964.8361			G	B		C	B
9240		11578.0332			G	B		C	B
92a0		1929.6722			G	B		C	B
92d0		964.8361			G	B		C	B
9340		23156.0664			G	B		C	B
9530		7718.6888			G	B		C	B
9560		964.8361			G	B		C	B
9580		964.8361			G	B		C	B

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species				Population in the site						Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	G
B	A168	Actitis hypoleucos			c				R		D			
B	A229	Alcedo atthis			r				P		D			

B	A255	Anthus campestris			r				P		D			
P	1614	Apium repens			p				V		B	B	B	B
B	A091	Aquila chrysaetos			p	6	6	p		G	D			
B	A028	Ardea cinerea			w	1	2	i		G	D			
I	1092	Austropotamobius pallipes			p				P		D			
M	1308	Barbastella barbastellus			p				P		D			
B	A215	Bubo bubo			p				P		D			
B	A133	Burhinus oedicnemus			p				P		D			
B	A243	Calandrella brachydactyla			r				P		D			
B	A224	Caprimulgus europaeus			r				P		D			
F	1126	Chondrostoma toxostoma			p				C		C	A	B	A
B	A080	Circaetus gallicus			r				P		D			
B	A084	Circus pygargus			r	14	22	p		G	D			
B	A379	Emberiza hortulana			r				P		D			
B	A103	Falco peregrinus			p				P		D			
B	A245	Galerida theklae			p				P		D			
I	1075	Graellsia isabellae			p				P		D			
B	A078	Gyps fulvus			p	107	176	p		G	D			
B	A093	Hieraetus fasciatus			p	1	1	p		G	D			
B	A092	Hieraetus pennatus			r				P		D			
B	A246	Lullula arborea			p				P		D			
M	1355	Lutra lutra			p				P		D			
R	1221	Mauremys leprosa			p				P		D			
B	A242	Melanocorypha calandra			p				P		D			
B	A073	Milvus migrans			r				V		D			
M	1310	Miniopterus schreibersii			p	3000	3000	i		G	C	A	C	A
M	1307	Myotis blythii			p				P		D			
M	1324	Myotis myotis			p				P		D			
B	A077	Neophron percnopterus			r	4	6	p		G	D			
B	A279	Oenanthe leucura			p				P		D			
B	A005	Podiceps cristatus			w	4	9	i		G	D			
B	A346	Pyrrhocorax pyrrhocorax			p				P		D			

M	1305	Rhinolophus euryale			p				P		D		
F	1127	Rutilus arcasii			p				R		D		
B	A302	Sylvia undata			p				P		D		

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C R V P	IV	V	A	B	C	D
P		Antirrhinum pertegasii										X		
M	1368	Capra pyrenaica								X		X		
M	1322	Myotis nattereri							X		X			

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see [reference portal](#))
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories:** **IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N18	26.0
N22	2.0

N10	4.0
N06	2.0
N08	25.0
N21	17.0
N19	22.0
Total Habitat Cover	98

Other Site Characteristics

Área de gran calidad ambiental y paisajística en la que destacan sus múltiples barrancos y las formaciones forestales de diversas características. El sector más septentrional forma parte de la gran extensión montañosa de los picos de Tortosa y Beceite que constituye la Reserva Nacional de caza y se extiende también por las provincias de Tarragona y Teruel. Igualmente incluye la Sierra del Turmell y los montes de la Vallivana. Comprende también diversos tramos fluviales bien conservados, entre ellos el riu Bergantes, en los que aparecen hábitats y especies característicos y en un remarcables estado de conservación.

4.2 Quality and importance

La zona presenta algunos de los bosques más vírgenes de esta Comunidad. Diversos endemismos vegetales y abundantes elementos eurosiberianos. Alberga poblaciones nidificantes de 22 especies de aves incluidas en el Anexo I de la Directiva 79/409/CEE. No obstante, la zona es de especial importancia para la conservación de rapaces rupícolas. Alberga el 61,5% de los efectivos regionales de Buitre Leonado (hasta 176 parejas en 2006) y el 47,6% de la población de Alimoche Común (con un máximo de 6 parejas en 2007). Posee hasta nueve territorios diferentes de Águila Real (con un máximo de 6 parejas nidificantes en 2006, el 8,1% del total regional) y dos de Águila-azor Perdicera. Existen áreas de matorral mediterráneo de importancia para la nidificación del Aguilucho Cenizo (14,4% de los efectivos regionales). Los rangos de las poblaciones de aves reflejadas en el apartado 3.2 muestran los contingentes mínimos y máximos registrados en el periodo 2003-2008, elaborados a partir de censos oficiales.

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

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Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES10	7.0	ES00	93.0		

5.2 Relation of the described site with other sites:

designated at national or regional level:

Type code	Site name	Type	Cover [%]
ES10	Parc Natural de la Tinença de Benifassà		

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

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Organisation:	Conselleria d'Infraestructures, Territori i Medi Ambient. Generalitat Valenciana
Address:	Ciutat Administrativa 9 D'Octubre-Torre 1. C/ Castán Tobeñas, 77. 46018 Valencia (España)
Email:	nebot_jos@gva.es

6.2 Management Plan(s):

An actual management plan does exist:

- Yes
 No, but in preparation
 No

7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

- Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE ES5233001
SITENAME Tinença de Benifassà, Turmell i Vallivana

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- [7. MAP OF THE SITE](#)

1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code ES5233001	Back to top
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1.3 Site name

Tinença de Benifassà, Turmell i Vallivana

1.4 First Compilation date 1997-12	1.5 Update date 2004-03
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1.6 Respondent:

Name/Organisation: Conselleria d'Infraestructures, Territori i Medi Ambient. Generalitat Valenciana
Address: Ciutat Administrativa 9 D'Octubre-Torre 1. C/ Castán Tobeñas, 77. 46018 Valencia (España)
Email: nebot_jos@gva.es

Date site proposed as SCI:	1997-12
Date site confirmed as SCI:	No data
Date site designated as SAC:	No data
National legal reference of SAC designation:	No data

2. SITE LOCATION

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		495.97860000000003		G	A		C	A
6420		495.97860000000003		G	A		C	A
6430		495.97860000000003		G	A		C	A
7220		495.97860000000003		G	B		C	B
8130		495.97860000000003		G	A		C	A
8210		991.95720000000001		G	A		B	A
8310		495.97860000000003		G	C		C	C
9240		4959.786		G	B		C	B
92A0		495.97860000000003		G	A		C	A
9340		17359.251		G	B		C	B
9530		2479.893		G	A		C	A
9560		991.95720000000001		G	A		C	A
9580		495.97860000000003		G	C		C	C

- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species			Population in the site							Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Gl
B	A229	Alcedo atthis			p				P		D			
B	A255	Anthus campestris			p				P		D			
B	A091	Aquila chrysaetos			p	6	10	p		G	C	B	C	B
I	1092	Austropotamobius pallipes			p				P		C	C	A	B
M	1308	Barbastella barbastellus			p				P		D			
B	A215	Bubo bubo			p	11	50	p		G	C	B	C	B

B	A243	Calandrella brachydactyla			p				P		D			
B	A224	Caprimulgus europaeus			p				P		D			
F	1126	Chondrostoma toxostoma			p				R		D			
B	A080	Circaetus gallicus			r	6	10	p		G	C	B	C	B
B	A103	Falco peregrinus			p	11	50	p		G	C	B	C	B
B	A245	Galerida theklae			p				P		D			
I	1075	Graellsia isabellae			p				P		C	B	B	B
B	A078	Gyps fulvus			p	51	100	p		G	C	B	C	B
B	A093	Hieraetus fasciatus			p	6	10	p		G	C	B	C	B
B	A092	Hieraetus pennatus			r	1	5	p		G	C	B	C	B
B	A246	Lullula arborea			p				P		D			
R	1221	Mauremys leprosa			p				P		C	C	B	B
B	A077	Neophron percnopterus			p	1	5	p		G	C	B	B	C
B	A279	Oenanthe leucura			p				P		D			
B	A346	Pyrrhocorax pyrrhocorax			p				P		D			
F	1127	Rutilus arcasii			p				R		D			
B	A302	Sylvia undata			p				P		D			

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C R V P	IV	V	A	B	C	D
P		Antirrhinum pertegasii										X		
M	1368	Capra pyrenaica								X		X		

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see [reference portal](#))
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories:** **IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N21	10.0
N18	20.0
N16	10.0
N06	3.0
N10	5.0
N17	5.0
N22	12.0
N08	35.0
Total Habitat Cover	100

4.2 Quality and importance

Extenso territorio montañoso en el cual aparecen representados una gran variedad de hábitats asociados a la media montaña mediterránea. En conjunto, alberga una elevada diversidad, tanto por lo que respecta a la fauna como a la flora, con una buena representación de endemismos locales. Una parte significativa del área está incluida en la Reserva Nacional de Caza dels Ports de Tortosa i Beseit.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
L	F03.01		I
H	D01.02		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES00	100.0				

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

Organisation:	Conselleria d'Infraestructures,Territori i Medi Ambient. Generalitat Valenciana
Address:	Ciutat Administrativa 9 D'Octubre-Torre 1. C/ Castán Tobeñas, 77. 46018 Valencia (España)
Email:	nebot_jos@gva.es

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/> Yes
<input type="checkbox"/> No, but in preparation
<input checked="" type="checkbox"/> No

7. MAP OF THE SITES

INSPIRE ID:

Map delivered as PDF in electronic format (optional)

Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE ES5223029
SITENAME Riu Bergantes

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- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS](#)
- [6. SITE MANAGEMENT](#)
- [7. MAP OF THE SITE](#)

1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code ES5223029	Back to top
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1.3 Site name

Riu Bergantes

1.4 First Compilation date 1997-12	1.5 Update date 2004-03
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1.6 Respondent:

Name/Organisation: Conselleria d'Infraestructures, Territori i Medi Ambient. Generalitat Valenciana
Address: Ciutat Administrativa 9 D'Octubre-Torre 1. C/ Castán Tobeñas, 77. 46018 Valencia (España)
Email: nebot_jos@gva.es

Date site proposed as SCI:	1997-12
Date site confirmed as SCI:	No data
Date site designated as SAC:	No data
National legal reference of SAC designation:	No data

2. SITE LOCATION

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- **PF:** for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.
- **NP:** in case that a habitat type no longer exists in the site enter: x (optional)
- **Cover:** decimal values can be entered
- **Caves:** for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species			Population in the site							Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A229	Alcedo atthis			p	1	5	p		G	D			
B	A224	Caprimulgus europaeus			p				P		D			
F	1126	Chondrostoma toxostoma			p				C		C	A	B	A
B	A080	Circus gallicus			r	1	5	p		G		B	C	B
B	A103	Falco peregrinus			p	1	5	p		G	C	B	C	B
B	A245	Galerida theklae			p				P		D			
B	A078	Gyps fulvus			p	1	5	p		G	D			
B	A092	Hieraetus pennatus			r	1	5	p		G	C	B	C	B
B	A246	Lullula arborea			p				P		D			
M	1355	Lutra lutra			p	5	15	i		G	C	A	C	B
B	A077	Neophron percnopterus			r	1	5	p		G				
F	1127	Rutilus arcasii			p				C		D			

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site			Motivation						
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C R V P	IV	V	A	B	C	D
M	1368	Capra pyrenaica								X		X		
M	2595	Neomys anomalus												X
P	6232	Petrocoptis pardoii										X		

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see [reference portal](#))
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present
- **Motivation categories:** **IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N19	10.0
N16	10.0
N18	30.0
N02	30.0
N08	20.0
Total Habitat Cover	100

4.2 Quality and importance

Área constituida por el cauce alto del riu Bergantes y las elevaciones que lo enmarcan, cubiertas de bosques de enebros, robles y pinos negros. Se trata en conjunto de una zona de gran interés faunístico, ligada básicamente a ecosistemas fluviales y en la que también aparecen importantes endemismos vegetales.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]

H	E03.01		I
L	B02.02		I
H	C01.01		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES00	100.0				

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Conselleria d'Infraestructures, Territori i Medi Ambient. Generalitat Valenciana
Address:	Ciutat Administrativa 9 D'Octubre-Torre 1. C/ Castán Tobeñas, 77. 46018 Valencia (España)
Email:	nebot_jos@gva.es

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/>	Yes
<input type="checkbox"/>	No, but in preparation
<input checked="" type="checkbox"/>	No

7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE ES5223002
SITENAME L'Alt Maestrat

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1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code ES5223002	Back to top
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1.3 Site name

L'Alt Maestrat

1.4 First Compilation date 1997-12	1.5 Update date 2004-03
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1.6 Respondent:

Name/Organisation: Conselleria d'Infraestructures, Territori i Medi Ambient. Generalitat Valenciana
Address: Ciutat Administrativa 9 D'Octubre-Torre 1. C/ Castán Tobeñas, 77. 46018 Valencia (España)
Email: nebot_jos@gva.es

Date site proposed as SCI:	1997-12
Date site confirmed as SCI:	No data
Date site designated as SAC:	No data
National legal reference of SAC designation:	No data

2. SITE LOCATION

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B	A245	theklae			p				P		D			
B	A078	Gyps fulvus			p	11	50	p		G	C	B	C	B
B	A092	Hieraetus pennatus			r	1	5	p		G	C	B	C	B
B	A246	Lullula arborea			p				P		D			
M	1310	Miniopterus schreibersii			p	3000	3000	i		G	C	A	C	A
M	1307	Myotis blythii			p				P		D			
M	1324	Myotis myotis			p				P		D			
B	A279	Oenanthe leucura			p				P		D			
B	A346	Pyrrhocorax pyrrhocorax			p				P		D			
M	1305	Rhinolophus euryale			p				P		D			
B	A302	Sylvia undata			p				P		D			

- **Group:** A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Type:** p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)
- **Unit:** i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))
- **Abundance categories (Cat.):** C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information
- **Data quality:** G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site				Motivation					
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C R V P	IV	V	A	B	C	D
M	1368	Capra pyrenaica								X		X		
M	1322	Myotis nattereri							X		X			

- **Group:** A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles
- **CODE:** for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name
- **S:** in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes
- **NP:** in case that a species is no longer present in the site enter: x (optional)
- **Unit:** i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see [reference portal](#))
- **Cat.:** Abundance categories: C = common, R = rare, V = very rare, P = present

- **Motivation categories:** **IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

4.1 General site character

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Habitat class	% Cover
N08	30.0
N21	20.0
N06	2.0
N22	2.0
N18	20.0
N19	20.0
N10	6.0
Total Habitat Cover	100

4.2 Quality and importance

Area de gran calidad paisajística, en la que destacan los múltiples barrancos donde, en bosques mixtos, hallan refugio especies singulares en el Mediterráneo, propias de la región eurosiberiana. Alternando con los barrancos, destacan las parameras con sabinas propias del Maestrazgo. Contiene más del 15% del hábitat "Erinaceo-Anthyllidetum montanae". Se localizan en su interior dos refugios importantes para murciélagos: la Ermita de la Mare de Deu de la Font y el Forat de Cantallops, ambos en término de Ares. Una de las dos zonas de reproducción del Alimoche en la C. Valenciana.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
M	A04.03		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
M	A04		I

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

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Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES00	100.0				

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

Organisation:	Conselleria d'Infraestructures, Territori i Medi Ambient. Generalitat Valenciana
Address:	Ciutat Administrativa 9 D'Octubre-Torre 1. C/ Castán Tobeñas, 77. 46018 Valencia (España)
Email:	nebot_jos@gva.es

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/> Yes
<input type="checkbox"/> No, but in preparation
<input checked="" type="checkbox"/> No

7. MAP OF THE SITES

INSPIRE ID:

Map delivered as PDF in electronic format (optional)

Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **ES0000020**
SITENAME **Delta de l'Ebre**

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1. SITE IDENTIFICATION

1.1 Type C	1.2 Site code ES0000020	Back to top
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1.3 Site name

Delta de l'Ebre

1.4 First Compilation date	1.5 Update date
1997-12	2014-12

1.6 Respondent:

Name/Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	bustia.spen.tes@gencat.cat

1.7 Site indication and designation / classification dates

Date site classified as SPA:	1988-02
National legal reference of SPA designation	Acuerdo de Gobierno de la Generalitat de Catalunya 09/87, de 1987, por el que se designan las ZEPA del Parque Nacional de Aigüestortes, de los Parques Naturales de Cadí-Moixeró, Delta del Ebro y Aiguamolls del Empordà i la Reserva Natural parcial de Mas de Melons
Date site proposed as SCI:	2006-09
Date site confirmed as SCI:	No data
Date site designated as SAC:	2014-11
National legal reference of SAC designation:	Acuerdo de Gobierno 150/2014, de 4 de noviembre http://portaldogc.gencat.cat/utillsEADOP/PDF/6744/1379474.pdf

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude

0.7717

Latitude

40.6121

2.2 Area [ha]:

48531.97

2.3 Marine area [%]

74.12

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code

Region Name

ES51	Cataluña
ESZZ	Extra-Regio

2.6 Biogeographical Region(s)

Mediterranean (25.88
%)

MMarine (74.12
Mediterranean %)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
1130			24.18		M				
1140			1608.1160378342722		G	A	A	A	A
1150			1496.6647919476447		G	A	A	A	A
1160			47.028658694654126		G	A	A	A	A
1170			0.1		M				
1310			127.04580789289606		G	A	A	A	A
1320			85.11240889531278		G	A	A	A	B
1410			237.98363731095063		G	A	A	A	A
1420			631.2752413060159		G	A	A	A	A
1430			13.95145947521662		G	A	C	A	B

1510			110.47194693272479		G	B		A	B	B
2110			84.66457404360811		G	A		A	A	A
2120			73.34136387372132		G	A		A	A	B
2190			8.37		G	C		C	C	C
2210			188.41122368663204		G	A		A	A	A
2230			47.85630430252135		G	A		A	A	A
3140			5.423476962051684		G	A		A	B	A
3150			5.496186668425541		G	A		B	A	A
3260			0.3		G					
3280					G	A		C	A	A
6420			1.37		G	C		C	C	C
7210			311.50918720475687		G	A		A	A	A
92A0			2.290473084587632		G	B		C	B	B
92D0			2.22		G	C		C	C	C

PF: for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.

NP: in case that a habitat type no longer exists in the site enter: x (optional)

Cover: decimal values can be entered

Caves: for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A293	Acrocephalus melanopogon			w				P		B	B	B	A
B	A293	Acrocephalus melanopogon			r	100	122	p	P	G	B	B	B	A
B	A293	Acrocephalus melanopogon			c				P		B	B	B	A
B	A293	Acrocephalus melanopogon			p				P		B	B	B	A
B	A294	Acrocephalus paludicola			c				P		C	B	C	C
B	A229	Alcedo atthis			c				P					
B	A229	Alcedo atthis			w				P					
F	1103	Alosa fallax			c				P		C	B	C	C
B	A255	Anthus campestris			c				P					
B	A255	Anthus campestris			r	4	29	p		G				

F	1151	Aphanius iberus			p				P		A	B	A	A
B	A029	Ardea purpurea			c				P		B	B	B	A
B	A029	Ardea purpurea			r	436	436	p		G	B	B	B	A
B	A024	Ardeola ralloides			r	674	674	p	P	G	A	B	A	A
B	A024	Ardeola ralloides			w	1	15	i	P	M	A	B	A	A
B	A024	Ardeola ralloides			c				P		A	B	A	A
B	A024	Ardeola ralloides			p				P		A	B	A	A
B	A222	Asio flammeus			w				P					
B	A222	Asio flammeus			c				P					
B	A060	Aythya nyroca			w	1	7	i		M	C	B	C	C
B	A060	Aythya nyroca			c				P		C	B	C	C
B	A021	Botaurus stellaris			w				P		A	B	A	A
B	A021	Botaurus stellaris			c				P		A	B	A	A
B	A133	Burhinus oedicnemus			w	1	80	i		M				
B	A133	Burhinus oedicnemus			c				P					
B	A243	Calandrella brachydactyla			r	17	28	p		G	C	B	C	B
B	A243	Calandrella brachydactyla			c				P		C	B	C	B
B	A010	Calonectris diomedea			c				P					
B	A224	Caprimulgus europaeus			c				P					
R	1224	Caretta caretta			p		1	p		G	B	B	C	B
B	A138	Charadrius alexandrinus			r	1500	1700	p	P	G				
B	A139	Charadrius morinellus			c				P					
B	A196	Chlidonias hybridus			c				P		B	B	B	A
B	A196	Chlidonias hybridus			p				P		B	B	B	A
B	A196	Chlidonias hybridus			r	1234	1234	p	P	G	B	B	B	A
B	A196	Chlidonias hybridus			w	1	200	i	P	M	B	B	B	A
B	A197	Chlidonias niger			c				P		C	B	B	B
B	A031	Ciconia ciconia			w	1	11	i		G				
B	A031	Ciconia ciconia			c				P					
B	A030	Ciconia nigra			c				P					
B	A030	Ciconia nigra			w		1	i		G				
B	A081	Circus aeruginosus			w	250	300	i		G	B	B	B	A
B	A081	Circus aeruginosus			c				P		B	B	B	A
B	A082	Circus cyaneus			w	1	8	i		M	C	B	C	C
B	A082	Circus cyaneus			c				P		C	B	C	C
B	A084	Circus pygargus			c				P					
F	1149	Cobitis taenia			p				P		C	B	C	C
I	1044	Coenagrion mercuriale												
B	A231	Coracias garrulus			c				P					
B	A122	Crex crex			c				P					
B	A027	Egretta alba			r	9	9	p		G	A	B	B	A
B	A027	Egretta alba			c	9	9	p	P	G	A	B	B	A

B	A027	Egretta alba		w	254	254	i		G	A	B	B	A
B	A027	Egretta alba		p	9	9	p		G	A	B	B	A
B	A026	Egretta garzetta		c				P		B	B	B	A
B	A026	Egretta garzetta		p				P		B	B	B	A
B	A026	Egretta garzetta		w	2000	4400	i	P	G	B	B	B	A
B	A026	Egretta garzetta		r	1684	1684	p	P	G	B	B	B	A
B	A379	Emberiza hortulana		c				P					
R	1220	Emys orbicularis		p				P		C	B	C	C
B	A098	Falco columbarius		w	5	15	i		G			B	C
B	A098	Falco columbarius		c				P				B	C
B	A100	Falco eleonora		c				P					
B	A095	Falco naumanni		c				P					
B	A103	Falco peregrinus		c				P					
B	A103	Falco peregrinus		w	1	11	i		M				
B	A126	Fulica cristata		r		2	p	P	G	C	B	C	C
B	A126	Fulica cristata		c				P		C	B	C	C
B	A126	Fulica cristata		p				P		C	B	C	C
B	A126	Fulica cristata		w	1	13	i	P	M	C	B	C	C
B	A002	Gavia arctica		w	1	5	i		M				
B	A003	Gavia immer		w	1	6	i		M				
B	A001	Gavia stellata		w	1	5	i		M				
B	A189	Gelochelidon nilotica		c				P		B	B	B	A
B	A189	Gelochelidon nilotica		r	589	589	p		G	B	B	B	A
B	A135	Glareola pratincola		r	162	162	p		G	C	B	B	A
B	A135	Glareola pratincola		c				P		C	B	B	A
B	A127	Grus grus		w	1	5	i		M				
B	A127	Grus grus		c				P					
B	A093	Hieraetus fasciatus		c				P					
B	A092	Hieraetus pennatus		c				P					
B	A131	Himantopus himantopus		r	2129	2129	p	P	G	A	B	B	A
B	A131	Himantopus himantopus		p				P		A	B	B	A
B	A131	Himantopus himantopus		w	1	15	i	P	M	A	B	B	A
B	A131	Himantopus himantopus		c				P		A	B	B	A
B	A014	Hydrobates pelagicus		c				P					
B	A022	Ixobrychus minutus		c				P		A	B	C	A
B	A022	Ixobrychus minutus		w				P		A	B	C	A
B	A022	Ixobrychus minutus		r	1	2000	p		M	A	B	C	A
P	1581	Kosteletzkya pentacarpos		p				P		C	B	C	C
B	A181	Larus audouinii		c	1	200	i	P	M	A	B	B	A
B	A181	Larus audouinii		r	15329	15329	p		G	A	B	B	A
B	A181	Larus audouinii		w	1	302	i		M	A	B	B	A
B	A181	Larus audouinii		p	1	200	i		M	A	B	B	A

B	A180	Larus genei			c	418	418	p	P	G	A	B	B	A
B	A180	Larus genei			w	1	490	i		M	A	B	B	A
B	A180	Larus genei			r	418	418	p		G	A	B	B	A
B	A180	Larus genei			p	418	418	p		G	A	B	B	A
B	A176	Larus melanocephalus			w	35000	35000	i		G	A	B	B	A
B	A176	Larus melanocephalus			p	2	2	p		G	A	B	B	A
B	A176	Larus melanocephalus			r	2	2	p		G	A	B	B	A
B	A176	Larus melanocephalus			c	2	2	p	P	G	A	B	B	A
B	A157	Limosa lapponica			c				P		B	B	B	A
B	A157	Limosa lapponica			w	1	976	i		M	B	B	B	A
B	A246	Lullula arborea			c				P					
B	A272	Luscinia svecica			c				P					
B	A272	Luscinia svecica			w				P					
B	A057	Marmaronetta angustirostris			c				P					
R	1221	Mauremys leprosa			p				P		C	B	B	C
B	A073	Milvus migrans			c				P					
B	A074	Milvus milvus			c				P					
M	1356	Mustela lutreola			p				V		C	B	B	B
M	1324	Myotis myotis			p				P		C	B	C	B
B	A023	Nycticorax nycticorax			r	411	411	p	P	G	B	B	C	A
B	A023	Nycticorax nycticorax			p				P		B	B	C	A
B	A023	Nycticorax nycticorax			c				P		B	B	C	A
B	A023	Nycticorax nycticorax			w	1	455	i	P	M	B	B	C	A
B	A071	Oxyura leucocephala			c				P					
B	A094	Pandion haliaetus			c				P					
B	A094	Pandion haliaetus			w	1	6	i		M				
F	6150	Parachondrostoma toxostoma			p				P		C	B	C	C
B	A072	Pernis apivorus			c				P					
F	1095	Petromyzon marinus								G				
B	A392	Phalacrocorax aristotelis desmarestii			c				P					
B	A170	Phalaropus lobatus			c				P					
B	A170	Phalaropus lobatus			w	1	1	i		G				
B	A151	Philomachus pugnax			w	1	775	i		M				
B	A151	Philomachus pugnax			c				P					
B	A035	Phoenicopterus roseus			w	5200	8000	i	P	G	B	B	B	A
B	A035	Phoenicopterus roseus			r	1590	1590	p	P	G	B	B	B	A
B	A035	Phoenicopterus roseus			c				P		B	B	B	A
B	A035	Phoenicopterus roseus			p				P		B	B	B	A
B	A034	Platalea leucorodia			w	24	49	i		G	C	B	C	B

B	A034	Platalea leucorodia			c				P		C	B	C	B
B	A032	Plegadis falcinellus			p	62	62	p		G	C	B	C	B
B	A032	Plegadis falcinellus			c	62	62	p	P	G	C	B	C	B
B	A032	Plegadis falcinellus			w	50	234	i		G	C	B	C	B
B	A032	Plegadis falcinellus			r	62	62	p		G	C	B	C	B
B	A140	Pluvialis apricaria			c				P					
B	A140	Pluvialis apricaria			w	2200	5900	i		G				
B	A124	Porphyrio porphyrio			p				P		B	C	B	A
B	A124	Porphyrio porphyrio			w				P		B	C	B	A
B	A124	Porphyrio porphyrio			c				P		B	C	B	A
B	A124	Porphyrio porphyrio			r				P		B	C	B	A
B	A120	Porzana parva			c				P		C	B	C	C
B	A120	Porzana parva			r	1	5	p		G	C	B	C	C
B	A119	Porzana porzana			c				P					
B	A119	Porzana porzana			w									
B	A121	Porzana pusilla			c				P					
B	A121	Porzana pusilla			r									
B	A384	Puffinus puffinus mauretanicus			c				P					
B	A132	Recurvirostra avosetta			p				P		B	B	B	A
B	A132	Recurvirostra avosetta			r	397	397	p	P	G	B	B	B	A
B	A132	Recurvirostra avosetta			w	770	1290	i	P	G	B	B	B	A
B	A132	Recurvirostra avosetta			c				P		B	B	B	A
M	1304	Rhinolophus ferrumequinum							P	G	C	C	C	C
B	A195	Sterna albifrons			r	393	393	p		G	B	B	B	A
B	A195	Sterna albifrons			c				P		B	B	B	A
B	A190	Sterna caspia			c				P					
B	A190	Sterna caspia			w	1	4	i		M				
B	A193	Sterna hirundo			r	5341	5341	p		G	A	B	B	A
B	A193	Sterna hirundo			c				P		A	B	B	A
B	A191	Sterna sandvicensis			r	2659	2659	p	P	G	A	B	B	A
B	A191	Sterna sandvicensis			p				P		A	B	B	A
B	A191	Sterna sandvicensis			w				P		A	B	B	A
B	A191	Sterna sandvicensis			c				P		A	B	B	A
B	A302	Sylvia undata			c				P					
R	1217	Testudo hermanni			p	101	250	i		G	B	B	A	A
R	1217	Testudo hermanni			r	101	250	i	P	G	B	B	A	A
B	A166	Tringa glareola			c				P					
B	A166	Tringa glareola			w	150	150	i		G				
M	1349	Tursiops truncatus			p				P		C	B	C	C
F	1153	Valencia hispanica			p				P		A	B	A	A

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles

S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Type: p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

4. SITE DESCRIPTION

4.1 General site character

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Habitat class	% Cover
N03	1.14
N07	1.61
N06	2.68
N01	15.29
N12	77.35
N23	0.06
N04	1.86
N16	
Total Habitat Cover	NaN

Other Site Characteristics

El Delta es un sistema dinámico resultado de un continuo de procesos estructurales y de las transformaciones antrópicas de los últimos años. Constituido por una gran llanura aluvial indisoluble de un sistema de lagunas y estanques, de grandes extensiones de playas arenosas, de aguas y suelos con diferentes gradientes de salinidad. La población vegetal del Delta es la mejor muestra de la vegetación de marjales y costera del litoral arenoso en Cataluña, que alberga algunos elementos de gran singularidad. La fauna del Delta es particularmente rica y variada y está representada por varios grupos tanto de invertebrados como de vertebrados, entre los cuales destacan las aves. La gran diversidad de ambientes deltaicos acogen poblaciones faunísticas muy diversas, algunas de ellas muy interesantes desde un punto de vista zoogeográfico.

4.2 Quality and importance

El Delta del Ebro constituye un extenso humedal de características única en Cataluña, que acoge un conjunto de sistemas naturales, acuáticos y terrestres, de excepcional singularidad y diversidad de un medio poco representado en el litoral mediterráneo. Por sus dimensiones y variedad morfológica, constituye la formación deltaica más importante del mediterráneo occidental. La notable diversidad de ambientes se traduce en un paisaje singular con un poblamiento faunístico muy relevante, sobretodo ornítico. Destaca la presencia de diversas aves con una población muy relevante a nivel de toda la región biogeográfica mediterránea, muy especialmente de *Larus audouinii*.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
H	J02.05		I
H	F02.02.02		I
H	A08		I
H	A07		I
L	C01.05		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.4 Ownership (optional)

4.5 Documentation

Els sistemes naturals del Delta de l'Ebre. Treballs ICHN. Diversos autors.

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES10	8.005	ES05	2.185	ES43	100.0
ES06	5.013				

5.2 Relation of the described site with other sites:

designated at international level:

Type	Site name	Type	Cover [%]
Other	Delta de l'Ebre		

5.3 Site designation (optional)

Los límites de este espacio han sido trazados de acuerdo con la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, del Instituto Cartográfico de Catalunya, que es el instituto cartográfico oficial y competente de la Generalitat de Catalunya. Los mapas facilitados para formalizar la propuesta de este espacio y definir su delimitación, citados en más adelante en este formulario, tienen la misma precisión de detalles, y la misma calidad, que los mapas de la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, que publica con carácter oficial el Instituto Cartográfico de Catalunya. Estos mapas son la referencia, si no se indica lo contrario, de los detalles de descripción planimétrica, topográfica y/o toponímica que se puedan dar en este formulario. Este espacio está incluido en el 'Pla d'Espais d'Interès Natural' (PEIN), aprobado por el Decreto 328/1992 de la Generalitat de Catalunya. Su inclusión en el PEIN implica un grado de protección en parte del lugar que no queda reflejado en el Apartado 5.1 del formulario, ya que la figura PEIN no está recogida en el mismo.

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	spen.tes@gencat.cat

6.2 Management Plan(s):

An actual management plan does exist:

<input checked="" type="checkbox"/>	Yes	Name: Acuerdo de Gobierno 150/2014. Anexo 6. Instrumento de gestión de las ZEC declaradas en la región mediterránea. http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf Link: http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf
<input type="checkbox"/>	No, but in preparation	
<input type="checkbox"/>	No	

6.3 Conservation measures (optional)

7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **ES5140005**
SITENAME **Serra de Montsià**

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- [1. SITE IDENTIFICATION](#)
- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS](#)
- [6. SITE MANAGEMENT](#)
- [7. MAP OF THE SITE](#)

1. SITE IDENTIFICATION

1.1 Type C	1.2 Site code ES5140005	Back to top
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1.3 Site name

Serra de Montsià

1.4 First Compilation date	1.5 Update date
1997-12	2014-12

1.6 Respondent:

Name/Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	bustia.spen.tes@gencat.cat

1.7 Site indication and designation / classification dates

Date site classified as SPA:	2005-03
National legal reference of SPA designation	Acuerdo de Gobierno de la Generalitat de Catalunya de 8 de febrero de 2005, por el que se designan como ZEPA algunos de los LIC propuestos en Cataluña
Date site proposed as SCI:	1997-12
Date site confirmed as SCI:	2006-07
Date site designated as SAC:	2014-11
National legal reference of SAC designation:	Acuerdo de Gobierno 150/2014, de 4 de noviembre http://portaldogc.gencat.cat/utillsEADOP/PDF/6744/1379474.pdf

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude

0.5289

Latitude

40.6192

2.2 Area [ha]:

5296.43

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code

Region Name

ES51	Cataluña
------	----------

2.6 Biogeographical Region(s)

Mediterranean (100.0
%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
5210			1.3251945415050579		G	C	C	C	C
5330			2792.5153072170324		G	A	B	A	B
6220			27.960135982887774		G	A	C	A	B
6420			0.5		G				
7220			0.9999999747767191		G	A	C	A	A
8210			93.13632922931646		G	A	C	A	B
9340			87.1385093380221		G	A	C	A	B
9540			94.21787832716143		G	A	C	A	B
9580			0.1		G				

PF: for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.

NP: in case that a habitat type no longer exists in the site enter: x (optional)

Cover: decimal values can be entered

Caves: for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some

extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site					Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A229	Alcedo atthis			p				P		D			
B	A255	Anthus campestris			r				P		C	B	C	C
B	A091	Aquila chrysaetos			p		1	p		G	C	B	C	C
B	A215	Bubo bubo			p	3	5	p		G	C	B	C	B
B	A243	Calandrella brachydactyla			r				P		C	B	C	C
B	A224	Caprimulgus europaeus			r				P		C	B	C	C
B	A080	Circaetus gallicus			r	1	5	p		G	C	B	C	C
B	A081	Circus aeruginosus			c				P		D			
B	A231	Coracias garrulus			r				P		C	B	C	C
B	A379	Emberiza hortulana			r				P		C	B	C	C
B	A103	Falco peregrinus			p	1	5	p		G	C	B	C	B
B	A245	Galerida theklae			p				P		C	B	C	C
B	A093	Hieraetus fasciatus			p	2	2	p		G	B	B	C	A
B	A092	Hieraetus pennatus			p				P		D			
M	1307	Myotis blythii			p				P		C	C	C	C
M	1324	Myotis myotis			p				P		C	C	C	C
B	A279	Oenanthe leucura			p				P		C	B	C	C
B	A302	Sylvia undata			p				P		C	B	C	C

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles

S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Type: p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

4. SITE DESCRIPTION

4.1 General site character

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Habitat class	% Cover
---------------	---------

N09	0.1
N08	65.25
N21	33.37
N23	0.2
N12	0.04
N22	0.29
N18	0.28
N17	0.47
Total Habitat Cover	100

Other Site Characteristics

El núcleo orográfico del Montsià constituye una unidad perfectamente definida a la orilla del mar, separada de la sierra Pre-litoral por una zona deprimida intermedia. El macizo está formado totalmente por calizas fisuradas con un relieve cárstico característico de notables valores paisajísticos montañosos conservando parte de su paisaje natural y contrastando con las llanuras dedicadas a los cultivos del entorno. La situación actual, muy transformada, presenta un predominio de las formaciones arbustivas mediterráneas -máquias de lentisco y palmito, matorrales calcícolas y garrigas-, con un carácter de acusada meridionalidad. Por su amortiguación climática el espacio presenta un gran interés biogeográfico al constituir el límite meridional de algunas especies extramediterráneas y un importante enclave de elementos meridionales, muy raros en el resto de Catalunya. Es notable el interés faunístico, dado que conserva una buena muestra de biotopos prácticamente inexistentes en el paisaje agrícola de las tierras del entorno.

4.2 Quality and importance

Buenas muestras de flora y vegetación de montaña de carácter meridional. Gran interés faunístico. Inclusión de una zona de campeo del águila perdicera.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
H	C01.01		I
H	A09		I
H	L09		I
H	J01		I
H	A02		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.4 Ownership (optional)

4.5 Documentation

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

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Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES43	100.0				

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

Los límites de este espacio han sido trazados de acuerdo con la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, del Instituto Cartográfico de Catalunya, que es el instituto cartográfico oficial y competente de la Generalitat de Catalunya. Los mapas facilitados para formalizar la propuesta de este espacio y definir su delimitación,

citados en más adelante en este formulario, tienen la misma precisión de detalles, y la misma calidad, que los mapas de la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, que publica con carácter oficial el Instituto Cartográfico de Catalunya. Estos mapas son la referencia, si no se indica lo contrario, de los detalles de descripción planimétrica, topográfica y/o toponímica que se puedan dar en este formulario. Este espacio está incluido en el 'Pla d'Espais d'Interès Natural' (PEIN), aprobado por el Decreto 328/1992 de la Generalitat de Catalunya. Su inclusión en el PEIN implica un grado de protección del lugar que no queda reflejado en el Apartado 5.1 del formulario, ya que la figura PEIN no está recogida en el mismo.

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

[Back to top](#)

Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	spen.tes@gencat.cat

6.2 Management Plan(s):

An actual management plan does exist:

<input checked="" type="checkbox"/>	Yes	Name: Acuerdo de Gobierno 150/2014. Anexo 6. Instrumento de gestión de las ZEC declaradas en la región mediterránea. http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf Link: http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf
<input type="checkbox"/>	No, but in preparation	
<input type="checkbox"/>	No	

6.3 Conservation measures (optional)

7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **ES5140011**
SITENAME **Sistema Prelitoral meridional**

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- [1. SITE IDENTIFICATION](#)
- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS](#)
- [6. SITE MANAGEMENT](#)
- [7. MAP OF THE SITE](#)

1. SITE IDENTIFICATION

1.1 Type C	1.2 Site code ES5140011	Back to top
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1.3 Site name

Sistema Prelitoral meridional

1.4 First Compilation date 1997-12	1.5 Update date 2014-12
--	-----------------------------------

1.6 Respondent:

Name/Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	bustia.spen.tes@gencat.cat

1.7 Site indication and designation / classification dates

Date site classified as SPA:	2005-03
National legal reference of SPA designation	Acuerdo de Gobierno de la Generalitat de Catalunya de 8 de febrero de 2005, por el que se designan como ZEPA algunos de los LIC propuestos en Cataluña
Date site proposed as SCI:	1997-12
Date site confirmed as SCI:	2006-07
Date site designated as SAC:	2014-11
National legal reference of SAC designation:	Acuerdo de Gobierno 150/2014, de 4 de noviembre http://portaldogc.gencat.cat/utillsEADOP/PDF/6744/1379474.pdf

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude

0.3856

Latitude

40.8053

2.2 Area [ha]:

51685.31

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code

Region Name

ES51	Cataluña
------	----------

2.6 Biogeographical Region(s)

Mediterranean (100.0
%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
3140 			0.999999764883684		G	A	C	A	A
3170 			0.2		G				
3250 			16.24443491736503		G	A	B	A	B
3260 			0.1		G				
3270 			6.857614336462389		G	C	C	C	C
3290 			0.1		G	C	C	C	C
4090 			866.2756801523491		G	A	A	B	A
5110 			765.8336543950998		G	A	B	A	B
5210 			1885.1023034596094		G	A	A	A	B
5330 			1803.0504083248336		G	B	B	B	B
6110 			0.999999764883684		G	A	C	B	A
6210 			11.818480191754054		G	A	C	A	B

6220			1180.025159871236		G	B		B	B	B
6420			34.49821875495822		G	A		B	A	B
6430			0.1		G					
6510			1.8398738407975477		G	B		C	B	B
7210			10.597415998993087		G	A		B	A	B
8110			2.252741600543591		G	C		C	C	C
8130			416.622448288327		G	A		B	A	B
8210			2634.4871304091		G	A		B	A	A
8310			0.999999764883684		G	B		C	B	B
9150			81.81892316692792		G	A		C	A	B
92A0			59.14165593118955		G	A		C	A	B
92D0			93.23641833260821	92D0	G	A		A	A	B
9340			5265.757933031451		G	A		B	A	B
9530			6119.071523881664		G	B		B	B	B
9540			7614.631551828813		G	A		B	A	B
9580			12.31294051771205		G	A		A	A	B

PF: for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.

NP: in case that a habitat type no longer exists in the site enter: x (optional)

Cover: decimal values can be entered

Caves: for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species			Population in the site							Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D			
						Min	Max				Pop.	Con.	Iso.	Glo.
I	6170	Actias isabellae			p				P		C	B	C	B
B	A229	Alcedo atthis			p				P		C	B	C	C
B	A255	Anthus campestris			r				P		C	B	C	C
B	A091	Aquila chrysaetos			p	10	10	p		G	B	B	C	A
P	1707	Atropa baetica			p	12	12	i		G	B	B	B	B
I	1092	Austropotamobius pallipes			p				P		C	B	B	B
M	1308	Barbastella barbastellus			p				P		C	B	C	B
B	A215	Bubo bubo			p	26	34	p		G	B	B	C	B

B	A243	Calandrella brachydactyla			r				P		C	B	C	C
B	A224	Caprimulgus europaeus			r				P		C	B	C	C
I	1088	Cerambyx cerdo			p				P		C	B	C	C
B	A080	Circaetus gallicus			r	11	50	p		G	C	B	C	C
F	5302	Cobitis paludica												
I	1044	Coenagrion mercuriale			p				P		C	B	C	C
B	A379	Emberiza hortulana			r				P		C	B	C	C
I	1065	Euphydryas aurinia			p				P		C	B	C	C
B	A103	Falco peregrinus			p	11	50	p		G	B	B	C	A
B	A245	Galerida theklae			p				P		C	B	C	C
I	1046	Gomphus graslinii			p				P		B	B	A	B
B	A078	Gyps fulvus			p	31	35	p		G	B	B	C	B
B	A093	Hieraetus fasciatus			p	8	8	p		G	B	B	C	A
B	A092	Hieraetus pennatus			r	1	5	p		G	C	B	C	C
B	A246	Lullula arborea			p				P		C	B	C	C
M	1355	Lutra lutra			p	1	5	i		G	C	B	C	B
I	1036	Macromia splendens			p				P		B	B	A	B
R	1221	Mauremys leprosa			p				P	G	C	B	C	C
B	A073	Milvus migrans			r		1	p		G	C	B	C	C
M	1310	Miniopterus schreibersii			p				P		C	C	C	C
M	1307	Myotis blythii			p				P		C	B	C	C
M	1321	Myotis emarginatus			p				P		C	B	C	C
M	1324	Myotis myotis			p				P		C	B	C	C
B	A077	Neophron percnopterus			r	2	2	p		G	B	B	C	B
B	A279	Oenanthe leucura			p				P		C	B	C	C
I	1041	Oxygastra curtisii			p				P		C	B	C	B
F	6150	Parachondrostoma toxostoma												
F	6150	Parachondrostoma toxostoma			p				P	G	C	B	C	B
B	A072	Pernis apivorus			r		1	p		G	C	B	C	C
B	A346	Pyrrhocorax pyrrhocorax			p				P		C	B	C	C
M	1305	Rhinolophus euryale			p				P	G	C	C	C	C
M	1304	Rhinolophus ferrumequinum			p				P	G	C	C	C	C
M	1303	Rhinolophus hipposideros			p				P	G	C	B	C	B
M	1302	Rhinolophus mehelyi			p				P	G	C	C	C	C
F	1127	Rutilus arcasii			p				P		C	B	B	B
B	A302	Sylvia undata			p				P		C	B	C	C

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles

S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Type: p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in

accordance with Article 12 and 17 reporting (see [reference portal](#))

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N22	2.03
N23	1.18
N08	16.72
N09	2.1
N07	0.09
N06	0.84
N16	0.39
N19	
N17	20.87
N12	0.19
N18	4.42
N21	51.17
N10	
Total Habitat Cover	NaN

Other Site Characteristics

Vegetación: En la parte basal, y también en las solanas y en la ladera oriental, predomina la maquia de carrasca y palmito (*Quercus-Lentiscetum*). En la ladera occidental, con un clima más fresco y continental, el nivel basal está ocupado por carrascales (*Quercetum rotundifoliae*). En la zona más elevada, la vegetación potencial es el encinar montano (*Quercetum mediterraneo-montanum*). El nivel submediterráneo está formado, básicamente, por pinares de pino laricio (*Violo-Quercetum faginae pinetosum salzmanni*) y de pino rojo con gayuba (*Arctostaphylo-Pinetum catalaunicae*). En las partes más transformadas hay bojedaes (*Violo-Quercetum faginae buxetosum*) y otras especies. En las zonas más húmedas de los niveles superiores, al sur del macizo, hay hayas (*Primulo-Fagetum*) y tejos (*Saniculo-Taxetum*), comunidades relictas de otras épocas más húmedas y frías. Las crestas, sometidas a fuertes vientos gran parte del año, presentan especies características de la alta montaña mediterránea, con comunidades propias de las montañas meridionales catalanas como la *Erinaceo-Anthyllidetum montanae* y la *Conopodio-Festucetum gautieri*. La vegetación rupícola es muy típica del macizo y de gran interés: el *Jasonio-Linarietum cadevallii* de las solanas, el *Hieracio-Salicetum tarraconensis* de las umbrías y el *Antirrhinetum pertegasii* de las sopeñas umbrosas. En esa vegetación rupícola destacan notables endemismos como el *Salix tarraconensis*, el *Antirrhinum pertegasii*, *Brassica repanda dertosensis*, *Armenia fontqueri*, *Saxifraga longifolia*, *Erodium celtibericum*, o la *Knautia rupicola*. Otras especies vegetales destacan por su rareza, como el *Prunus prostrata*, *Brimeura fontqueri*, *Dryopteris submontana*... o por aspectos fitogeográficos: *Polygala calcarea*, *Gymnocarpium robertiarum*, *Primula vulgaris*, *Nepeta tuberosa*? Los ambientes húmedos presentan algunas especies relictas como, por ejemplo, la tiraña (*Pinguicula dertosensis*), endemismo carnívoro del macizo que se encuentra en las goteras calcáreas. Las hayas de esas montañas resultan especialmente interesantes, por ser de las más meridionales de la Península Ibérica y haber sido protegidas con medidas especiales a través de la Reserva Natural Parcial de Les Fagedes dels Ports. Los alrededores de la sierra constituyen importantes zonas de cultivo tradicional de secano (almendros, olivos, etc.) que suponen una componente fundamental en la cadena trófica: fuente de alimento numerosas aves y animales. Fauna: Desde el punto de vista faunístico, el elemento más espectacular es la población de cabra salvaje, especie endémica de la Península Ibérica, que en Els Ports está regulada cinegéticamente por la Reserva Nacional de Caza. La nutria y el gato montés son algunos de los mamíferos protegidos del macizo. Muchas aves encuentran en Els Ports las condiciones de hábitat o de refugio idóneas para vivir y nidificar. Destacan los grandes rapaces sedentarios (el buitre, el águila real, el águila perdicera, el azor, el halcón peregrino, el búho real...) y nidificantes estivales (el águila culebrera, el águila calzada...). Además hay otras especies escasas y protegidas como el roquero solitario, la oropéndola, el trepador azul, el agateador o el mirlo acuático. Los reptiles también tienen una representación abundante en Els Ports, ya que en ese espacio natural se puede encontrar más del 50% de los reptiles presentes en Cataluña. La salamandrosa rosada, el eslizón ibérico, la culebra de herradura y la víbora hocicuda son exponentes relevantes de la población de reptiles. En

el caso de los anfibios la situación es similar, ya que en Els Ports figura más del 50% de especies de anfibios presentes en Cataluña. Se pueden observar especies tan interesantes como el gallipato, el tritón jaspeado o el sapillo moteado. La presencia de esas especies es muy importante, ya que indica la existencia de lugares húmedos y puntos de agua suficientes para su mantenimiento, algo que cabe destacar en un clima y un paisaje esencialmente mediterráneos. En los ríos destacan las poblaciones de especies autóctonas como la madrilla, la bermejuela o el cangrejo de río; entre los invertebrados, hay especies, endémicas del grupo de los moluscos, arácnidos y coleópteros, que figuran en la lista de especies protegidas por el Plan de Espacios de Interés Natural de Cataluña.

4.2 Quality and importance

Síntesis de la diversidad biológica del extremo meridional, montañoso de Catalunya. Verdadero paraíso Geobotánico relicto. Alto interés biogeográfico por conectar las montañas ibéricas con las del litoral catalán. Fauna abundante y diversa. Ejemplos bien conservados de rambla mediterránea. Áreas de ampliación por nidificación y campeo de especies del anexo I de la directiva aves: *Hieraetus fasciatus*, *Bubo bubo*, *Pyrrhocorax pyrrhocorax*, *Falco peregrinus*. Y en el anexo II de la directiva habitats: *Lutra lutra*. Así como de diversos hábitats de interés comunitario.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
M	C01.01		I
H	H04		I
H	I01		O
H	L09		I
H	G01		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.4 Ownership (optional)

4.5 Documentation

Flora del Massís del Port. Ll. de Torres. Institut d'Estudis Tarragonins

5. SITE PROTECTION STATUS (optional)

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5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES43	100.0	ES10	66.485	ES06	1.686

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

Los límites de este espacio han sido trazados de acuerdo con la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, del Instituto Cartográfico de Catalunya, que es el instituto cartográfico oficial y competente de la Generalitat de Catalunya. Los mapas facilitados para formalizar la propuesta de este espacio y definir su delimitación, citados en más adelante en este formulario, tienen la misma precisión de detalles, y la misma calidad, que los mapas de la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, que publica con carácter oficial el Instituto Cartográfico de Catalunya. Estos mapas son la referencia, si no se indica lo contrario, de los detalles de descripción planimétrica, topográfica y/o toponímica que se puedan dar en este formulario. Este espacio está incluido en el 'Pla d'Espais d'Interès Natural' (PEIN), aprobado por el Decreto 328/1992 de la Generalitat de Catalunya. Su inclusión en el PEIN implica un grado de protección del lugar que no queda reflejado en el Apartado 5.1 del formulario, ya que la figura PEIN no está recogida en el mismo. En concreto el pertenece a los espacios del PEIN de Serres de Pàndols-Cavalls, els Ports y Barrancs de Sant Antoni-Lloret-la Galera.

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

[Back to top](#)

Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	spen.tes@gencat.cat

6.2 Management Plan(s):

An actual management plan does exist:

<input checked="" type="checkbox"/> Yes	Name: Acuerdo de Gobierno 150/2014. Anexo 6. Instrumento de gestión de las ZEC declaradas en la región mediterránea. http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf Link: http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf
<input type="checkbox"/> No, but in preparation	
<input type="checkbox"/> No	

6.3 Conservation measures (optional)

7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **ES5140002**
SITENAME **Serra de Godall**

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- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS](#)
- [6. SITE MANAGEMENT](#)
- [7. MAP OF THE SITE](#)

1. SITE IDENTIFICATION

1.1 Type C	1.2 Site code ES5140002	Back to top
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1.3 Site name

Serra de Godall

1.4 First Compilation date	1.5 Update date
2006-08	2014-12

1.6 Respondent:

Name/Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	bustia.spen.tes@gencat.cat

1.7 Site indication and designation / classification dates

Date site classified as SPA:	2006-09
National legal reference of SPA designation	Acuerdo de Gobierno 112/2006, de 5 de septiembre de 2006, por el que se designan ZEPA y se aprueba la propuesta de LIC
Date site proposed as SCI:	2006-09
Date site confirmed as SCI:	2008-12
Date site designated as SAC:	2014-11
National legal reference of SAC designation:	Acuerdo de Gobierno 150/2014, de 4 de noviembre http://portaldogc.gencat.cat/utillsEADOP/PDF/6744/1379474.pdf

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude

0.4611

Latitude

40.6327

2.2 Area [ha]:

1782.45

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code

Region Name

ES51	Cataluña
------	----------

2.6 Biogeographical Region(s)

Mediterranean (100.0
%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
5330			1104.8043393761184		G	B	B	B	B
6220			8.94586023028531		G	C	C	C	C
8210			4.6817735931069855		G	C	C	C	C
9340			40.845567696056996		G	C	C	C	C
9540			10.327582955573034		G	C	C	C	C

PF: for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.

NP: in case that a habitat type no longer exists in the site enter: x (optional)

Cover: decimal values can be entered

Caves: for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site					Site assessment	
G	Code	Scientific Name	S	NP	T	Size	Unit	Cat.	D.qual.	A B C D	A B C

					Min	Max				Pop.	Con.	Iso.	Glo.
B	A255	Anthus campestris		r	1	5	p		G	C	C	C	C
B	A091	Aquila chrysaetos		p		1	p		G	D			
B	A215	Bubo bubo		p	3	5	p		G	C	B	C	C
B	A080	Circaetus gallicus		r	1	1	p		G	C	C	C	C
B	A082	Circus cyaneus		w	3	5	i		G	C	B	C	C
B	A084	Circus pygargus		r	14	14	p		G	A	A	C	A
B	A103	Falco peregrinus		p	1	2	p		G	D			
B	A245	Galerida theklae		p	15	20	p		G	C	B	C	C
B	A093	Hieraetus fasciatus		p				P		B	B	C	C
B	A246	Lullula arborea		p	35	40	p		G	C	B	C	B
B	A279	Oenanthe leucura		p		2	p		G	D			
B	A302	Sylvia undata		p	25	35	p		G	C	B	C	B

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles

S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Type: p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

4. SITE DESCRIPTION

4.1 General site character

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Habitat class	% Cover
N23	1.9
N21	61.28
N06	0.99
N08	35.83
Total Habitat Cover	100

Other Site Characteristics

Medio físico: se trata de una brusca elevación montañosa que contrasta con su entorno, constituida por dolomitas y calizas dolomitizadas del Jurásico superior y calizas del Valanginiano y Barremiano. Vegetación: constituida por comunidades de garriga.

4.2 Quality and importance

Espacio natural de garriga y matorral rodeado por olivares, en el cual nidifican y se alimentan numerosas aves. Es zona de nidificación y campeo para el águila perdicera (*Hieraetus fasciatus*) y de varias parejas de aguilucho cenizo (*Circus Pygargus*). Además este area supone un conector ecológico entre la el sector de La Plana del Montsià (ES5140013) y la zona montañosa dels Ports (ES5140011), lo cual beneficia a la fauna dels Ports, permitiéndola acercarse a La Plana en busca de alimento.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
M	D06		I
M	C01.01.01		I
M	E06		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.4 Ownership (optional)

4.5 Documentation

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

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Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES43	100.0				

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

Los límites de este espacio han sido trazados de acuerdo con la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, del Instituto Cartográfico de Catalunya, que es el instituto cartográfico oficial y competente de la Generalitat de Catalunya. Los mapas facilitados para formalizar la propuesta de este espacio y definir su delimitación, citados en más adelante en este formulario, tienen la misma precisión de detalles, y la misma calidad, que los mapas de la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, que publica con carácter oficial el Instituto Cartográfico de Catalunya. Estos mapas son la referencia, si no se indica lo contrario, de los detalles de descripción planimétrica, topográfica y/o toponímica que se puedan dar en este formulario. Este espacio está incluido en el 'Pla d'Espais d'Interès Natural' (PEIN), aprobado por el Decreto 328/1992 de la Generalitat de Catalunya. Su inclusión en el PEIN implica un grado de protección del lugar que no queda reflejado en el Apartado 5.1 del formulario, ya que la figura PEIN no está recogida en el mismo..

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

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Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	spen.tes@gencat.cat

6.2 Management Plan(s):

An actual management plan does exist:

<input checked="" type="checkbox"/> Yes	Name: Acuerdo de Gobierno 150/2014. Anexo 6. Instrumento de gestión de las ZEC declaradas en la región mediterránea. http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf Link: http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf
<input type="checkbox"/> No, but in preparation	
<input type="checkbox"/> No	

6.3 Conservation measures (optional)

7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **ES5140023**
SITENAME **Secans del Montsià**

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- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS](#)
- [6. SITE MANAGEMENT](#)
- [7. MAP OF THE SITE](#)

1. SITE IDENTIFICATION

1.1 Type C	1.2 Site code ES5140023	Back to top
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1.3 Site name

Secans del Montsià

1.4 First Compilation date	1.5 Update date
2006-08	2014-12

1.6 Respondent:

Name/Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	bustia.spen.tes@gencat.cat

1.7 Site indication and designation / classification dates

Date site classified as SPA:	2006-09
National legal reference of SPA designation	Acuerdo de Gobierno 112/2006, de 5 de septiembre de 2006, por el que se designan ZEPA y se aprueba la propuesta de LIC
Date site proposed as SCI:	2006-09
Date site confirmed as SCI:	2008-12
Date site designated as SAC:	2014-11
National legal reference of SAC designation:	Acuerdo de Gobierno 150/2014, de 4 de noviembre http://portaldogc.gencat.cat/utillsEADOP/PDF/6744/1379474.pdf

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude

0.35

Latitude

40.6331

2.2 Area [ha]:

2116.24

2.3 Marine area [%]

0.0

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code

Region Name

ES51	Cataluña
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2.6 Biogeographical Region(s)

Mediterranean (100.0
%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
5330			344.9499395487619		G	B	C	B	B
6220			14.152361387010764		G	C	C	C	C

PF: for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.

NP: in case that a habitat type no longer exists in the site enter: x (optional)

Cover: decimal values can be entered

Caves: for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site						Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D	A B C		
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A255	Anthus campestris			r	5	10	p		G	C	C	C	C
B	A215	Bubo bubo			p	2	2	p		G	C	C	C	C
B	A080	Circaetus			r	1	2	p		G	C	C	C	C

		gallicus												
B	A082	Circus cyaneus			w	6	7	i		G	C	B	C	C
B	A084	Circus pygargus			r	19	19	p		G	A	A	C	A
B	A103	Falco peregrinus			p	1	1	p		G	D			
B	A245	Galerida theklae			p	11	15	p		G	C	B	C	C
B	A092	Hieraetus pennatus			r	1	1	p		G	C	C	C	C
B	A246	Lullula arborea			p	35	40	p		G	C	B	C	B
B	A077	Neophron percnopterus			r	1	1	p		G	C	C	C	C
B	A302	Sylvia undata			p	15	20	p		G	C	B	C	C

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles

S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Type: p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

4. SITE DESCRIPTION

4.1 General site character

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Habitat class	% Cover
N21	89.63
N09	0.36
N08	10.0
Total Habitat Cover	99.99

Other Site Characteristics

Vegetación: constituida por un paisaje agrícola tradicional, fuente de alimento de numerosas paseriformes, mezclado con comunidades de garriga. Dentro del espacio propuesto se encuentra una de las mayores concentraciones de olivos milenarios del país, con ejemplares de cerca de 2500 años de edad.

4.2 Quality and importance

Zona de especial importancia para una no menos importante comunidad nidificante de aguilucho cenizo (*Circus pygargus*). Parte de la zona es además fundamental para garantizar su alimento.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
M	D01.02		I
M	A02		I
M	A09		I

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions
i = inside, o = outside, b = both

4.4 Ownership (optional)

4.5 Documentation

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

[Back to top](#)

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES43	100.0				

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

Los límites de este espacio han sido trazados de acuerdo con la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, del Instituto Cartográfico de Catalunya, que es el instituto cartográfico oficial y competente de la Generalitat de Catalunya. Los mapas facilitados para formalizar la propuesta de este espacio y definir su delimitación, citados en más adelante en este formulario, tienen la misma precisión de detalles, y la misma calidad, que los mapas de la cartografía topográfica y planimétrica de referencia, a escala 1:50.000, que publica con carácter oficial el Instituto Cartográfico de Catalunya. Estos mapas son la referencia, si no se indica lo contrario, de los detalles de descripción planimétrica, topográfica y/o toponímica que se puedan dar en este formulario.

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

[Back to top](#)

Organisation:	Generalitat de Catalunya Departament de Territori i Sostenibilitat
Address:	Av. Diagonal, 523-525 08029 Barcelona
Email:	spen.tes@gencat.cat

6.2 Management Plan(s):

An actual management plan does exist:

<input checked="" type="checkbox"/>	Yes	Name: Acuerdo de Gobierno 150/2014. Anexo 6. Instrumento de gestión de las ZEC declaradas en la región mediterránea. http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf Link: http://www.gencat.cat/mediamb/xn2000/Acuerdo_150_2014_Anejo6_Instrumento_Gestion.pdf
<input type="checkbox"/>	No, but in preparation	
<input type="checkbox"/>	No	

6.3 Conservation measures (optional)

7. MAP OF THE SITES

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INSPIRE ID:

Map delivered as PDF in electronic format (optional)

Yes No

Reference(s) to the original map used for the digitalisation of the electronic boundaries (optional).





NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **ES0000307**
SITENAME **Puertos de Beceite**

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- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS](#)
- [6. SITE MANAGEMENT](#)

1. SITE IDENTIFICATION

1.1 Type A	1.2 Site code ES0000307	Back to top
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1.3 Site name

Puertos de Beceite

1.4 First Compilation date	1.5 Update date
2001-10	2012-06

1.6 Respondent:

Name/Organisation:	Dirección General de Sostenibilidad. Departamento de Desarrollo Rural y Sostenibilidad. Gobierno de Aragón
Address:	San Pedro Nolasco, 7. 5071 Zaragoza
Email:	biodiversidad@aragon.es

1.7 Site indication and designation / classification dates

Date site classified as SPA:	2001-07
National legal reference of SPA designation	No data

2. SITE LOCATION

2.1 Site-centre location [decimal degrees]:

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Longitude 0.156111111 **Latitude** 40.77833333

2.2 Area [ha]:

14813.835169

2.3 Marine area [%]**2.4 Sitelength [km]:**

0.0

2.5 Administrative region code and name**NUTS level 2 code****Region Name**

ES24

Aragón

2.6 Biogeographical Region(s)Mediterranean (100.0
%)**3. ECOLOGICAL INFORMATION**[Back to top](#)**3.1 Habitat types present on the site and assessment for them**

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
3150			9.663		M	B	C	B	B
3250			16.086		M	A	C	A	A
5110			703.41		M	C	C	C	B
5210			463.741		M	A	C	A	A
5330			0.041		M	C	C	C	C
6110			122.799		M	A	C	A	A
6170			67.885		M	A	C	A	A
6220			138.07		M	A	C	A	A
6420			58.18		M	A	C	A	A
6430			9.663		M	A	C	A	A
7210			6.296		M	A	C	A	A
7220			16.09		M	A	C	A	A
8130			9.938		M	A	C	A	A

B	A113				r					P	DD	D			
B	A212	Cuculus canorus			r					P	DD	C	A	C	A
B	A253	Delichon urbica			c					P	DD	C	B	C	B
B	A253	Delichon urbica			r					C	DD	C	A	C	A
B	A379	Emberiza hortulana			r					P	DD	C	B	C	B
I	6199	Euplagia quadripunctaria			p	-1					DD	D			
B	A103	Falco peregrinus			p					R	DD	C	B	C	B
B	A099	Falco subbuteo			r					P	DD	C	B	C	B
B	A322	Ficedula hypoleuca			c					P	DD	C	B	C	B
B	A359	Fringilla coelebs			c					C	DD	C	B	C	B
B	A359	Fringilla coelebs			w					P	DD	C	C	C	C
B	A359	Fringilla coelebs			p					C	DD	C	A	C	A
B	A245	Galerida theklae			p					P	DD	C	B	C	B
B	A078	Gyps fulvus			p	41	41	p			G	C	A	C	B
B	A093	Hieraetus fasciatus			p	1	1	p			G	C	B	C	B
B	A092	Hieraetus pennatus			r					P	DD	C	B	C	B
B	A300	Hippolais polyglotta			r					P	DD	C	B	C	B
B	A251	Hirundo rustica			c					P	DD	C	B	C	B
B	A251	Hirundo rustica			r					P	DD	D			
B	A233	Jynx torquilla			r					P	DD	C	B	C	B
B	A341	Lanius senator			r					P	DD	C	B	C	B
B	A246	Lullula arborea			p					P	DD	C	B	C	B
B	A271	Luscinia megarhynchos			r					C	DD	C	A	C	A
M	1355	Lutra lutra			p					P	DD	D			
B	A230	Merops apiaster			c					P	DD	C	C	C	C
B	A230	Merops apiaster			r					P	DD	C	B	C	B
B	A073	Milvus migrans			c					P	DD	C	B	C	C
M	1310	Miniopterus schreibersii				-1					DD	D			
B	A280	Monticola saxatilis			r					P	DD	C	B	C	B
B	A319	Muscicapa striata			c					P	DD	C	C	C	C
B	A319	Muscicapa striata			r					P	DD	C	C	C	C
B	A077	Neophron percnopterus			r	1	3	p			M	C	B	C	B
B	A278	Oenanthe hispanica			r					P	DD	C	B	C	B
B	A279	Oenanthe leucura			p					P	DD	C	B	C	C
B	A277	Oenanthe oenanthe			c					P	DD	C	B	C	B
B	A277	Oenanthe oenanthe			r					P	DD	C	C	C	C
B	A337	Oriolus oriolus			r					P	DD	C	B	C	B
B	A214	Otus scops			r					P	DD	C	C	C	C
F	5292	Parachondrostoma miegii			p					P	DD	C	C	C	C
B	A274	Phoenicurus phoenicurus			c					P	DD	D			

B	A313	Phylloscopus bonelli			r				C	DD	C	A	C	A
B	A315	Phylloscopus collybita			w				P	DD	D			
B	A315	Phylloscopus collybita			p				P	DD	C	C	C	C
B	A315	Phylloscopus collybita			c				P	DD	C	B	C	B
B	A267	Prunella collaris			c				P	DD	C	B	C	B
B	A266	Prunella modularis			p				P	DD	C	B	C	B
B	A250	Ptyonoprogne rupestris			r				C	DD	C	A	C	A
B	A250	Ptyonoprogne rupestris			c				C	DD	C	A	C	A
B	A346	Pyrrhocorax pyrrhocorax			p				P	DD	C	B	C	B
B	A210	Streptopelia turtur			r				P	DD	C	C	C	C
B	A311	Sylvia atricapilla			p				C	DD	C	B	C	B
B	A311	Sylvia atricapilla			c				P	DD	D			
B	A310	Sylvia borin			c				P	DD	D			
B	A310	Sylvia borin			r				P	DD	C	C	C	C
B	A304	Sylvia cantillans			r				C	DD	C	A	C	A
B	A309	Sylvia communis			r				P	DD	D			
B	A303	Sylvia conspicillata			r				P	DD	D			
B	A302	Sylvia undata			p				P	DD	C	B	C	B
B	A333	Tichodroma muraria			c				P	DD	D			
B	A285	Turdus philomelos			w				P	DD	C	C	C	C
B	A284	Turdus pilaris			c				P	DD	C	C	C	C
B	A282	Turdus torquatus			c				P	DD	C	C	C	C
B	A287	Turdus viscivorus			w				P	DD	D			
B	A287	Turdus viscivorus			c				P	DD	D			
B	A287	Turdus viscivorus			p				C	DD	C	B	C	B
B	A232	Upupa epops			r				P	DD	D			

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles

S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Type: p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site			Motivation	
Group	CODE	Scientific	S	NP	Size	Unit	Cat.	Species	Other

		Name			Min	Max		Annex		categories				
								C R V P	IV	V	A	B	C	D
B	A085	Accipiter gentilis						P					X	X
B	A086	Accipiter nisus						P					X	X
B	A324	Aegithalos caudatus						P					X	X
B	A110	Alectoris rufa						P						X
A	1191	Alytes obstetricans						C	X		X		X	X
B	A221	Asio otus						P					X	X
B	A218	Athene noctua						P					X	X
F	5565	Barbatula barbatula						R			X	X		
F	5565	Barbatula barbatula						R			X	X		
F	5262	Barbus haasi						C		X		X		
F	5262	Barbus haasi						C		X		X		
A	2361	Bufo bufo						C			X		X	X
P		Buxus sempervirens						P						X
M	5581	Capra pyrenaica hispanica						C						X
M	2644	Capreolus capreolus						P						X
B	A366	Carduelis cannabina						P					X	X
B	A364	Carduelis carduelis						P					X	X
B	A335	Certhia brachydactyla						P					X	X
B	A288	Cettia cetti						P					X	X
R	1272	Chalcides bedriagai						P	X		X	X		
B	A363	Chloris chloris						P					X	X
B	A264	Cinclus cinclus						P					X	X
B	A207	Columba oenas						P						X
R	1283	Coronella austriaca						P	X		X			
B	A350	Corvus corax						P					X	X
B	A347	Corvus monedula						P						X
P		Corylus avellana						P						X
B	A237	Dendrocopos major						P					X	X
B	A383	Emberiza calandra						P					X	X
B	A378	Emberiza cia						P					X	X
B	A377	Emberiza cirulus						P					X	X
A	6284	Epidalea calamita						P	X		X		X	
B	A269	Erithacus rubecula						P					X	X
B	A096	Falco tinnunculus						P					X	X

Pena, Uldemo) disecciona las calizas formando profundos cañones y gargantas fluviokársticas de gran interés.

4.2 Quality and importance

Amplio rango altitudinal, comprendido entre los 500 y 1.300 m que determina una amplia gama de cubierta vegetal que incluye matorrales helofíticos, encinares, quejigares y pinares de diferentes especies. Paisaje abrupto en el que destaca la presencia de congostos calizos con algunos macizos de conglomerados. Es un área de interés para rapaces rupícolas y forestales, con *Aquila chrysaetos*, *Gyps fulvus*, con poblaciones en recuperación, y *Falco peregrinus*. Escasos, *Neophron percnopterus* e *Hieraetus fasciatus*. en las áreas boscosas, varios territorios de *Circaetus gallicus* e *Hieraetus pennatus*. Presencia patente de *Pyrrhocorax pyrrhocorax*. Especies del matorral, con buenas poblaciones de *Lullula arborea* y *Sylvia undata*.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
L	G01.04		i
H	J02.05.05		i
M	J01		b
M	I01		i
L	G01.03		i
M	F03.02.03		i
L	F03.01		i
M	D01.01		i
M	A05.01		b
M	J03.02		i
L	G01.02		i
M	D02.01		i
M	F02.03		i
H	J02.05		i
M	E06		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
	X		-

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.4 Ownership (optional)

Type	[%]	
Public	National/Federal	0
	State/Province	0
	Local/Municipal	0
	Any Public	21.55
Joint or Co-Ownership	0	
Private	0	
Unknown	0	
sum	21.55	

4.5 Documentation

-Lagares, J.L. 1989) Censo de tres rapaces rupícolas en el sector NE de la provincia de Teruel: águila real, águila perdicera y alimoche. *Xiloca*, 3: 163-173.-Varios Autores. 1998. *Aves de Aragón. Atlas de especies nidificantes*. DGA - Ibercaja. Zaragoza.

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

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Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES00	100.0				

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

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6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/> Yes
<input checked="" type="checkbox"/> No, but in preparation
<input type="checkbox"/> No

6.3 Conservation measures (optional)

7. MAP OF THE SITES



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **ES2420036**
SITENAME **Puertos de Beceite**

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- [1. SITE IDENTIFICATION](#)
- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
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- [6. SITE MANAGEMENT](#)

1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code ES2420036	Back to top
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1.3 Site name

Puertos de Beceite

1.4 First Compilation date 1998-12	1.5 Update date 2012-06
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1.6 Respondent:

Name/Organisation:	Dirección General de Sostenibilidad. Departamento de Desarrollo Rural y Sostenibilidad. Gobierno de Aragón
Address:	San Pedro Nolasco, 7. 5071 Zaragoza
Email:	biodiversidad@aragon.es

1.7 Site indication and designation / classification dates

Date site classified as SPA:	0000-00
National legal reference of SPA designation	No data
Date site proposed as SCI:	1999-04
Date site confirmed as SCI:	2006-06
Date site designated as SAC:	No data
National legal reference of SAC designation:	No data

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude
-0.201388889

Latitude
40.79555556

2.2 Area [ha]:

4664.532147

2.3 Marine area [%]

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code **Region Name**

ES24	Aragón
------	--------

2.6 Biogeographical Region(s)

Mediterranean (100.0
%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
3150 			3.39		M	B	C	B	B
3250 			8.84		M	A	C	A	A
5110 			34.07		M	A	C	A	A
5210 			49.18		M	A	C	A	A
6110 			90.05		M	A	C	A	A
6170 			55.51		M	A	C	A	A
6220 			117.75		M	A	C	A	A
6420 			33.54		M	A	C	A	A
6430 			3.39		M	A	C	A	A

B	A208	palumbus			p				C	DD	C	B	C	B
B	A212	Cuculus canorus			r				C	DD	C	B	C	B
B	A253	Delichon urbica			r				C	DD	C	B	C	B
B	A379	Emberiza hortulana			r				P	DD	C	B	C	B
B	A269	Erithacus rubecula			p				C	DD	C	B	C	B
B	A103	Falco peregrinus			p	2	2	p		P	C	B	C	B
B	A099	Falco subbuteo			r				P	DD	C	C	C	C
B	A359	Fringilla coelebs			p				C	DD	C	B	C	B
B	A245	Galerida theklae			p				P	DD	C	B	C	B
B	A078	Gyps fulvus			p	36	36	p		G	C	B	C	B
B	A093	Hieraetus fasciatus			p	1	1	p		G	C	C	C	B
B	A300	Hippolais polyglotta			r				C	DD	C	B	C	B
B	A251	Hirundo rustica			c				C	DD	C	B	C	B
B	A233	Jynx torquilla			r				P	DD	C	C	C	C
B	A341	Lanius senator			r				P	DD	C	C	C	C
B	A246	Lullula arborea			p				P	DD	C	B	C	B
B	A271	Luscinia megarhynchos			r				C	DD	C	B	C	B
M	1355	Lutra lutra			p				P	DD	D			
B	A230	Merops apiaster			r				P	DD	C	C	C	C
B	A262	Motacilla alba			p				P	DD	C	C	C	C
B	A319	Muscicapa striata			c				P	DD	C	C	C	C
B	A319	Muscicapa striata			r				P	DD	C	C	C	C
B	A077	Neophron percnopterus			r	0	1	p		M	C	B	C	B
B	A278	Oenanthe hispanica			r				P	DD	C	C	C	C
B	A279	Oenanthe leucura			p				P	DD	C	B	C	C
B	A277	Oenanthe oenanthe			r				P	DD	C	C	C	C
B	A337	Oriolus oriolus			r				P	DD	C	C	C	C
B	A214	Otus scops			r				P	DD	C	C	C	C
F	5292	Parachondrostoma miegii			p				C	DD	C	B	C	B
B	A273	Phoenicurus ochruros			p				C	DD	C	B	C	B
B	A313	Phylloscopus bonelli			r				C	DD	C	B	C	B
B	A315	Phylloscopus collybita			r				C	DD	C	B	C	B
B	A315	Phylloscopus collybita			w				P	DD	C	C	C	C
B	A267	Prunella collaris			w				P	DD	C	C	C	C
B	A266	Prunella modularis			p				P	DD	C	C	C	C
B	A346	Pyrrhocorax pyrrhocorax			p				P	DD	C	B	C	B
B	A318	Regulus ignicapillus			p				C	DD	C	B	C	B
B	A210	Streptopelia turtur			r				P	DD	C	C	C	C
B	A311	Sylvia atricapilla			r				P	DD	C	C	C	C

B	A335	brachydactyla						P					X	X
R	1272	Chalcides bedriagai						P	X		X	X		
B	A363	Chloris chloris						P					X	X
R	1283	Coronella austriaca						P	X		X			
B	A350	Corvus corax						P					X	X
P		Corylus avellana						P						X
B	A237	Dendrocopos major						P					X	X
B	A383	Emberiza calandra						P					X	X
B	A378	Emberiza cia						P					X	X
A	6284	Epidalea calamita						P	X		X		X	
B	A096	Falco tinnunculus						P					X	X
P		Ilex aquifolium						P						X
P		Lonicera pyrenaica pirenaica						P				X		
B	A369	Loxia curvirostra						P					X	X
F	5283	Luciobarbus graellsii						C		X		X	X	
F	5283	Luciobarbus graellsii						C		X		X	X	
B	A281	Monticola solitarius						P					X	X
B	A261	Motacilla cinerea						P					X	X
I	1057	Parnassius apollo			-1				X				X	
B	A328	Parus ater						P					X	X
B	A329	Parus caeruleus						P					X	X
B	A327	Parus cristatus						P					X	X
B	A330	Parus major						P					X	X
A	1198	Pelobates cultripes						P	X		X		X	
B	A357	Petronia petronia						P					X	X
P		Peucedanum hispanicum						P						X
B	A235	Picus viridis						P					X	X
P		Pinguicula grandiflora dertosensis			5	5	localities				X	X		
P		Pinus nigra salzmannii						P						X
P		Primula acaulis acaulis						P						X
R	2431	Psammodromus hispanicus						C			X		X	X
B	A250	Ptyonoprogne rupestris						P					X	X
P		Quercus faginea						P						X
P		Quercus ilex ballota						P						X

P		Quercus ilex ilex						P						X
P	1849	Ruscus aculeatus			2	2	grids1x1	P		X				X
F	6262	Salmo trutta trutta						C						X
F	6262	Salmo trutta trutta						C						X
B	A276	Saxicola torquatus						P					X	X
B	A362	Serinus citrinella						P					X	X
B	A362	Serinus citrinella						P					X	X
B	A361	Serinus serinus						P					X	X
B	A332	Sitta europaea						P					X	X
B	A219	Strix aluco						P					X	X
M	5861	Sus scrofa						P						X
B	A305	Sylvia melanocephala						P					X	X
P		Taxus baccata						P						X
P		Thymus wilkommi						P			X	X		
P		Valeriana tripteris						P						X

Group: A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles

CODE: for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name

S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Unit: i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see [reference portal](#))

Cat.: Abundance categories: C = common, R = rare, V = very rare, P = present

Motivation categories: **IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

4.1 General site character

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Habitat class	% Cover
N22	2.0
N15	0.0
N17	73.0
N08	25.0
Total Habitat Cover	100

Other Site Characteristics

Macizo calcáreo jurásico conformado por una serie de fallas inversas y cabalgamientos de vergencia NW. Área de recarga de un sistema acuífero drenado por el río Matarraña y otros barrancos de dirección SE-NW. Procesos kársticos con diversas surgencias, barrancos encajados y resaltes abruptos.

4.2 Quality and importance

Enclave de gran interés botánico, encrucijada de flora eurosiberiana y mediterránea, con varios hábitats prioritario y especies faunísticas de gran interés.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
L	G01.02		i
H	J02.05.05		i
L	G01.02		i
M	I01		i
L	F03.01		i
L	F03.01		i
L	B		i

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
	X		-

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.4 Ownership (optional)

Type	[%]	
Public	National/Federal	0
	State/Province	0
	Local/Municipal	0
	Any Public	40.81
Joint or Co-Ownership	0	
Private	0	
Unknown	0	
sum	40.81	

4.5 Documentation

FABREGAT LLUECA C Y LÓPEZ UDÍAS S. 1994. Estudio de las Comunidades Vegetales del área de los Puertos de Beceite. DGA. Inédito.

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

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Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES00	100.0				

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

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Organisation:	Dirección General de Sostenibilidad. Departamento de Desarrollo Rural y Sostenibilidad. Gobierno de Aragón
Address:	San Pedro Nolasco, 7 50071 - ZARAGOZA
Email:	sostenibilidad@aragon.es

6.2 Management Plan(s):

An actual management plan does exist:

- | | |
|-------------------------------------|------------------------|
| <input type="checkbox"/> | Yes |
| <input checked="" type="checkbox"/> | No, but in preparation |
| <input type="checkbox"/> | No |

6.3 Conservation measures (optional)

7. MAP OF THE SITES



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **ES2430097**
SITENAME **Río Matarranya**

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- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS](#)
- [6. SITE MANAGEMENT](#)

1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code ES2430097	Back to top
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1.3 Site name

Río Matarranya

1.4 First Compilation date 2000-07	1.5 Update date 2012-06
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1.6 Respondent:

Name/Organisation:	Dirección General de Sostenibilidad. Departamento de Desarrollo Rural y Sostenibilidad. Gobierno de Aragón
Address:	San Pedro Nolasco, 7. 5071 Zaragoza
Email:	biodiversidad@aragon.es

1.7 Site indication and designation / classification dates

Date site classified as SPA:	0000-00
National legal reference of SPA designation	No data
Date site proposed as SCI:	2000-07
Date site confirmed as SCI:	2006-06
Date site designated as SAC:	No data
National legal reference of SAC designation:	No data

6110			1.47		M	B		C	B	B
6220			1.47		M	B		C	B	B
6420			36.29		M	B		C	B	B
6430			241.15		M	B		C	B	B
7220			2.09		M	A		C	A	A
8130			0.451		M	A		C	A	A
92A0			586.263		M	B		C	B	B
92D0			0.45		M	B		C	B	B
9560			7.37		M	C		C	C	C

PF: for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.

NP: in case that a habitat type no longer exists in the site enter: x (optional)

Cover: decimal values can be entered

Caves: for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species			Population in the site							Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D	A B C		
						Min	Max				Pop.	Con.	Iso.	Glo.
F	6155	Achondrostoma arcasii			p				C	DD	C	C	C	C
B	A297	Acrocephalus scirpaceus			r				P	DD	C	C	C	C
B	A229	Alcedo atthis			p				P	DD	C	B	C	B
B	A228	Apus melba			r				P	DD	C	C	C	C
B	A091	Aquila chrysaetos			p	0	1	p		M	C	B	C	B
B	A028	Ardea cinerea			w				P	DD	C	B	C	C
B	A028	Ardea cinerea			c				P	DD	C	B	C	C
I	1092	Austropotamobius pallipes			p	1	1	localities		G	C	C	A	B
P	1500	Boleum asperum			p	-1				DD	D			
B	A215	Bubo bubo			p				P	DD	C	B	C	B
I	1088	Cerambyx cerdo			p				P	DD	D			
B	A136	Charadrius dubius			c				P	DD	C	B	C	C
B	A136	Charadrius dubius			r				P	DD	C	B	C	C
B	A031	Ciconia ciconia			p				P	DD	C	B	C	C
B	A030	Ciconia nigra			c				P	DD	D			
B	A080	Circaetus gallicus			c				P	DD	C	B	C	C

B	A315	collybita			c				P	DD	C	B	C	C
B	A315	Phylloscopus collybita			w				C	DD	C	B	C	C
B	A346	Pyrrhonorax pyrrhonorax			p				P	DD	C	B	C	B
B	A210	Streptopelia turtur			r				P	DD	C	B	C	C
B	A311	Sylvia atricapilla			p				P	DD	C	C	C	C
B	A302	Sylvia undata			p				P	DD	C	B	C	B
B	A333	Tichodroma muraria			c				P	DD	C	B	C	C
B	A333	Tichodroma muraria			w				P	DD	C	C	C	C
B	A285	Turdus philomelos			c				P	DD	C	B	C	C
B	A285	Turdus philomelos			w				P	DD	C	B	C	C
B	A287	Turdus viscivorus			p				P	DD	C	B	C	C
B	A232	Upupa epops			r				C	DD	C	B	C	B

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Type: p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species			Population in the site					Motivation						
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C R V P	IV	V	A	B	C	D
A	1191	Alytes obstetricans						P	X		X		X	X
F	3019	Anguilla anguilla						V			X			
F	3019	Anguilla anguilla						V			X			
B	A218	Athene noctua						P					X	X
F	5565	Barbatula barbatula						C			X	X		
F	5565	Barbatula barbatula						C			X	X		
F	5262	Barbus haasi						C		X		X		
F	5262	Barbus haasi						C		X		X		
B	A087	Buteo buteo						P					X	X
M	5581	Capra pyrenaica hispanica						P						X
B	A366	Carduelis cannabina						P					X	X

B	A364	Carduelis carduelis							P					X	X
B	A335	Certhia brachydactyla							P					X	X
M	2645	Cervus elaphus							P						X
B	A288	Cettia cetti							P					X	X
B	A363	Chloris chloris							P					X	X
B	A289	Cisticola juncidis							P					X	X
B	A350	Corvus corax							P					X	X
B	A383	Emberiza calandra							P					X	X
A	6284	Epidalea calamita							P	X		X		X	
B	A096	Falco tinnunculus							P					X	X
B	A244	Galerida cristata							P					X	X
F	5283	Luciobarbus graellsii							C		X		X	X	
F	5283	Luciobarbus graellsii							C		X		X	X	
B	A281	Monticola solitarius							P					X	X
B	A261	Motacilla cinerea							P					X	X
B	A329	Parus caeruleus							P					X	X
B	A330	Parus major							P					X	X
A	1198	Pelobates cultripes							P	X		X		X	
A	2360	Pelodytes punctatus			-1									X	
B	A357	Petronia petronia							P					X	X
B	A235	Picus viridis							P					X	X
P		Populus alba							P						X
P		Populus nigra							P						X
B	A250	Ptyonoprogne rupestris							P					X	X
P	1849	Ruscus aculeatus			1	1	grids1x1		P		X				X
F	5825	Salaria fluviatilis	Yes						V			X		X	
F	5825	Salaria fluviatilis	Yes						R			X		X	
F	5825	Salaria fluviatilis	Yes						R			X		X	
P		Salix alba							P						X
F	6262	Salmo trutta trutta							R						X
F	6262	Salmo trutta trutta							R						X
B	A361	Serinus serinus							P					X	X
F		Squalius laietanus							C			X			
F		Squalius laietanus							C			X			
M	5861	Sus scrofa							P						X

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
M	J02.02.01		i
H	E02.03		o
M	I01		i
L	A05.01		o
M	J03.02.01		i
H	J02.05		o
H	J02.06.01		i
M	A07		o
L	D01.02		i
M	A08		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
	X		-

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.4 Ownership (optional)

Type	[%]	
Public	National/Federal	0
	State/Province	0
	Local/Municipal	0
	Any Public	51.71
Joint or Co-Ownership	0	
Private	0	
Unknown	0	
sum	51.71	

4.5 Documentation

SUARES, F.; SAINZ, H; SANTOS, T.; GONZALEZ, F. (1991): "Las estepas ibéricas". M.O.P.T.BRAUN-BLANQUET, J.; De BOLOS, O (1987): "Las comunidades vegetales de la Depresión del Ebro y su dinamismo".PELLICER, F; ECHEVERRÍA, M. (1989): "Formas de relieve del Centro de la Depresión del Ebro". Institución Fernando el Católico.

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

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Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES00	100.0				

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

6. SITE MANAGEMENT

6.1 Body(ies) responsible for the site management:

[Back to top](#)

Organisation:	Dirección General de Sostenibilidad. Departamento de Desarrollo Rural y Sostenibilidad. Gobierno de Aragón
---------------	--

Address:	San Pedro Nolasco, 7 50071 - ZARAGOZA
Email:	sostenibilidad@aragon.es

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/> Yes
<input checked="" type="checkbox"/> No, but in preparation
<input type="checkbox"/> No

6.3 Conservation measures (optional)

7. MAP OF THE SITES



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE ES2420118

SITENAME Río Algars

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- [2. SITE LOCATION](#)
- [3. ECOLOGICAL INFORMATION](#)
- [4. SITE DESCRIPTION](#)
- [5. SITE PROTECTION STATUS](#)
- [6. SITE MANAGEMENT](#)

1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code ES2420118	Back to top
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1.3 Site name

Río Algars

1.4 First Compilation date	1.5 Update date
2000-07	2012-06

1.6 Respondent:

Name/Organisation:	Dirección General de Sostenibilidad. Departamento de Desarrollo Rural y Sostenibilidad. Gobierno de Aragón
Address:	San Pedro Nolasco, 7. 5071 Zaragoza
Email:	biodiversidad@aragon.es

1.7 Site indication and designation / classification dates

Date site classified as SPA:	0000-00
National legal reference of SPA designation	No data

Date site proposed as SCI:	2000-07
Date site confirmed as SCI:	2006-06
Date site designated as SAC:	No data
National legal reference of SAC designation:	No data

2. SITE LOCATION

2.1 Site-centre location [decimal degrees]:

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Longitude
0.2111111111

Latitude
41.14027778

2.2 Area [ha]:

472.401297

2.3 Marine area [%]

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code **Region Name**

ES24	Aragón
ES24	Aragón

2.6 Biogeographical Region(s)

Mediterranean (100.0
%)

3. ECOLOGICAL INFORMATION

3.1 Habitat types present on the site and assessment for them

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Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
3150 			8.92		M	B	C	B	B
3250 			8.17		M	A	C	A	A
3260 			8.92		M	B	C	B	B
3290 			17.48		M	B	C	B	B
5210 			0.93		M	C	C	C	C
5330 			0.02		M	B	C	B	B
6110 			0.46		M	A	C	A	A

6220			0.002		M	C		C	C	C
6420			12.51		M	B		C	B	B
6430			10.38		M	B		C	B	B
7210			1.056		M	A		C	A	A
7220			0.002		M	B		C	B	B
8130			0.311		M	B		C	B	B
8210			1.38		M	C		C	C	C
9240			0.005		M	C		C	C	C
92A0			13.083		M	B		C	B	B
92D0			8.92		M	B		C	B	B
9340			1.6		M	B		C	B	B
9560			1.38		M	C		C	B	B

PF: for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.

NP: in case that a habitat type no longer exists in the site enter: x (optional)

Cover: decimal values can be entered

Caves: for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species					Population in the site					Site assessment				
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
B	A091	Aquila chrysaetos			c				P	DD	D			
I	1092	Austroptamobius pallipes			p	-1				DD	D			
P	1500	Boleum asperum			p	-1				DD	D			
I	1088	Cerambyx cerdo			p				P	DD	D			
B	A080	Circaetus gallicus			r				P	DD	C	B	C	C
B	A207	Columba oenas			p				P	DD	C	C	C	C
B	A208	Columba palumbus			p				P	DD	C	C	C	C
B	A231	Coracias garrulus			r				P	DD	D			
B	A212	Cuculus canorus			r				P	DD	C	C	C	C

A	1195	Discoglossus jeanneae			p	-1				DD	D			
R	1220	Emys orbicularis			p				P	DD	D			
B	A322	Ficedula hypoleuca			c				P	DD	C	B	C	C
B	A359	Fringilla coelebs			p				P	DD	C	C	C	C
B	A359	Fringilla coelebs			w				P	DD	C	C	C	C
B	A245	Galerida theklae			p				P	DD	C	B	C	C
B	A078	Gyps fulvus			c				P	DD	D			
B	A093	Hieraetus fasciatus			c				P	DD	D			
B	A300	Hippolais polyglotta			r				C	DD	C	B	C	C
B	A251	Hirundo rustica			r				P	DD	C	C	C	C
B	A251	Hirundo rustica			c				P	DD	C	B	C	B
B	A341	Lanius senator			r				C	DD	C	B	C	C
B	A246	Lullula arborea			p				P	DD	C	B	C	C
M	1355	Lutra lutra			p	-1				DD	D			
R	1221	Mauremys leprosa			p				P	DD	D			
B	A230	Merops apiaster			r				C	DD	C	B	C	B
B	A073	Milvus migrans			r				P	DD	C	B	C	C
B	A262	Motacilla alba			p				P	DD	C	B	C	C
B	A319	Muscicapa striata			r				P	DD	C	C	C	C
B	A077	Neophron percnopterus			c				P	DD	D			
B	A279	Oenanthe leucura			p				P	DD	C	B	C	C
B	A337	Oriolus oriolus			r				P	DD	C	B	C	B
B	A214	Otus scops			r				P	DD	C	C	C	C
I	1041	Oxygastra curtisii			p				P	DD	D			
F	5292	Parachondrostoma miegii			p				C	DD	C	C	C	C
B	A315	Phylloscopus collybita			c				P	DD	C	C	C	C
B	A315	Phylloscopus collybita			w				P	DD	C	C	C	C
B	A210	Streptopelia turtur			r				P	DD	C	C	C	C
B	A311	Sylvia atricapilla			c				C	DD	C	B	C	B
B	A311	Sylvia atricapilla			p				P	DD	C	C	C	C
B	A302	Sylvia undata			p				P	DD	C	B	C	C
B	A232	Upupa epops			r				P	DD	C	C	C	C

Group: A = Amphibians, B = Birds, F = Fish, I = Invertebrates, M = Mammals, P = Plants, R = Reptiles
S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Type: p = permanent, r = reproducing, c = concentration, w = wintering (for plant and non-migratory species use permanent)

Unit: i = individuals, p = pairs or other units according to the Standard list of population units and codes in accordance with Article 12 and 17 reporting (see [reference portal](#))

Abundance categories (Cat.): C = common, R = rare, V = very rare, P = present - to fill if data are deficient (DD) or in addition to population size information

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some

extrapolation); P = 'Poor' (e.g. rough estimation); VP = 'Very poor' (use this category only, if not even a rough estimation of the population size can be made, in this case the fields for population size can remain empty, but the field "Abundance categories" has to be filled in)

3.3 Other important species of flora and fauna (optional)

Species					Population in the site			Motivation						
Group	CODE	Scientific Name	S	NP	Size		Unit	Cat.	Species Annex		Other categories			
					Min	Max		C R V P	IV	V	A	B	C	D
A	1191	Alytes obstetricans						P	X		X		X	X
B	A218	Athene noctua						P					X	X
F	5262	Barbus haasi						P		X		X		
F	5262	Barbus haasi						P		X		X		
M	5581	Capra pyrenaica hispanica						R						X
B	A366	Carduelis cannabina						P					X	X
B	A364	Carduelis carduelis						P					X	X
M	2645	Cervus elaphus						P						X
B	A288	Cettia cetti						P					X	X
B	A363	Chloris chloris						P					X	X
B	A350	Corvus corax						P					X	X
B	A383	Emberiza calandra						P					X	X
A	6284	Epidalea calamita						P	X		X		X	
B	A244	Galerida cristata						P					X	X
F	5283	Luciobarbus graellsii						C		X		X	X	
F	5283	Luciobarbus graellsii						C		X		X	X	
B	A281	Monticola solitarius						P					X	X
B	A261	Motacilla cinerea						P					X	X
B	A330	Parus major						P					X	X
A	1198	Pelobates cultripes						P	X		X		X	
A	2360	Pelodytes punctatus			-1								X	
B	A357	Petronia petronia						P					X	X
B	A235	Picus viridis						P					X	X
P		Populus alba						P						X
P		Populus nigra						P						X
B	A250	Ptyonoprogne rupestris						P					X	X
P	1849	Ruscus aculeatus			1	1	grids1x1	P		X				X
P		Salix alba						P						X

B	A276	Saxicola torquatus						P					X	X
B	A361	Serinus serinus						P					X	X
F		Squalius laietanus						C			X			
F		Squalius laietanus						C			X			
M	5861	Sus scrofa						P						X
B	A305	Sylvia melanocephala						P					X	X

Group: A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles

CODE: for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name

S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Unit: i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see [reference portal](#))

Cat.: Abundance categories: C = common, R = rare, V = very rare, P = present

Motivation categories: **IV, V:** Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

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4.1 General site character

Habitat class	% Cover
N06	1.0
N19	8.0
N12	8.0
N09	10.0
N10	2.0
N08	39.0
N23	3.0
N21	3.0
N17	17.0
N15	9.0
Total Habitat Cover	100

Other Site Characteristics

Este LIC recoge la mayor parte del tramo fluvial del río Algar, en su parte Aragonesa ya que actúa como frontera con la provincia de Tarragona. Es un río de régimen pluvial con una marcada irregularidad hídrica y fuertes estiajes durante el verano. Es un espacio de gran interés en cuanto a tipología paisajística fluvial en medios mediterráneos. La red fluvial, que tiene su cabecera en Els Ports de Beseit, circula en dirección S-N atravesando y modelando plataformas y relieves monoclinales terciarios, principalmente de litologías areniscosas, arcillosas y conglomeráticas. El río ha desarrollado un limitado sistema de terrazas aluviales y un amplio fondo de terraza subactual sobre la que se desarrollan las comunidades vegetales y las zonas de cultivos. Este área presenta una singularidad paisajística importante al tratarse de un espacio húmedo sobre un territorio con una disponibilidad hídrica muy limitada, este hecho explica el peso que adquieren tanto los cultivos hortofrutícolas como las formaciones vegetales de ribera. El paisaje vegetal está dominado por pequeños sotos mixtos con predominio de *Populus alba*, *Populus nigra* y *Salix alba* y zonas con galerías arbustivas mixtas colonizando pedregales sueltos junto a pastizales higrófilos. Las zonas circundantes están mayormente cubiertas por bosques de *Pinus halepensis* y matorrales esclerófilos mixtos formando garrigas.

Puntualmente algunos quejigares entremezclados con zonas de cultivos, completan el conjunto.

4.2 Quality and importance

Zona de especial interés por sus valores naturales, al tratarse de un corredor fluvial compuesto por pequeños sistemas de vegetación riparia que se comunican con los pequeños espacios seminaturales de las serrezuelas circundantes, resultando un interesante refugio para la fauna y flora, destacando *Lutra lutra* y *Austroptamobius pallipes*. Actúa igualmente como corredor biológico entre las sierras de Beceite y el río Ebro.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
M	A05.01		o
M	I01		i
M	D01.02		i
M	J02.02.01		i
M	A07		o
M	J02.06.01		i
M	A08		o
M	J03.02		i
M	F02.03		i
M	D02.01		i
M	J02.05		i
M	J02.12.02		i
M	F03.01		i
M	D01.01		i
M	J01		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
	X		-

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification,

T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.4 Ownership (optional)

Type	[%]	
Public	National/Federal	0
	State/Province	0
	Local/Municipal	0
	Any Public	9.5
Joint or Co-Ownership	0	
Private	0	
Unknown	0	
sum	9.5	

4.5 Documentation

SUARES, F.; SAINZ, H; SANTOS, T.; GONZALEZ, F. (1991): "Las estepas ibéricas". M.O.P.T.BRAUN-BLANQUET, J.; De BOLOS, O (1987): "Las comunidades vegetales de la Depresión del Ebro y su dinamismo".PELLICER, F; ECHEVERRÍA, M. (1989): "Formas de relieve del Centro de la Depresión del Ebro". Institución Fernando el Católico.

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES00	100.0				

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Dirección General de Sostenibilidad. Departamento de Desarrollo Rural y Sostenibilidad. Gobierno de Aragón
Address:	San Pedro Nolasco, 7 50071 - ZARAGOZA
Email:	sostenibilidad@aragon.es

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/>	Yes
<input checked="" type="checkbox"/>	No, but in preparation
<input type="checkbox"/>	No

6.3 Conservation measures (optional)

7. MAP OF THE SITES



NATURA 2000 - STANDARD DATA FORM

For Special Protection Areas (SPA),
Proposed Sites for Community Importance (pSCI),
Sites of Community Importance (SCI) and
for Special Areas of Conservation (SAC)

SITE **ES2420119**
SITENAME **Els Ports de Beseit**

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1. SITE IDENTIFICATION

1.1 Type B	1.2 Site code ES2420119	Back to top
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1.3 Site name

Els Ports de Beseit

1.4 First Compilation date 2000-07	1.5 Update date 2012-06
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1.6 Respondent:

Name/Organisation:	Dirección General de Sostenibilidad. Departamento de Desarrollo Rural y Sostenibilidad. Gobierno de Aragón
Address:	San Pedro Nolasco, 7. 5071 Zaragoza
Email:	biodiversidad@aragon.es

1.7 Site indication and designation / classification dates

Date site classified as SPA:	0000-00
National legal reference of SPA designation	No data
Date site proposed as SCI:	2000-07
Date site confirmed as SCI:	2006-06
Date site designated as SAC:	No data
National legal reference of SAC designation:	No data

2. SITE LOCATION

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2.1 Site-centre location [decimal degrees]:

Longitude
0.110833333

Latitude
40.75444444

2.2 Area [ha]:

10159.205138

2.3 Marine area [%]

2.4 Sitelength [km]:

0.0

2.5 Administrative region code and name

NUTS level 2 code **Region Name**

ES24	Aragón
------	--------

2.6 Biogeographical Region(s)

Mediterranean (100.0
%)

3. ECOLOGICAL INFORMATION

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3.1 Habitat types present on the site and assessment for them

Annex I Habitat types						Site assessment			
Code	PF	NP	Cover [ha]	Cave [number]	Data quality	A B C D	A B C		
						Representativity	Relative Surface	Conservation	Global
3150			6.28		M	B	C	B	B
3250			7.25		M	A	C	A	A
5110			669.62		M	C	C	C	B
5210			414.56		M	A	C	A	A
5330			0.04		M	C	C	C	C
6110			33.07		M	A	C	A	A
6170			12.69		M	B	C	B	B
6220			20.93		M	A	C	A	A
6420			24.68		M	A	C	A	A

6430		6.28		M	A	C	A	A
7210		1.466		M	A	C	A	A
7220		7.25		M	A	C	A	A
8130		8.022		M	A	C	A	A
8210		61.5		M	A	C	A	A
9240		1963.49		M	B	C	B	B
92A0		30.92		M	A	C	A	A
9340		2478.57		M	B	C	B	B
9530		793.71		M	A	C	A	A
9560		247.8		M	A	C	A	A

PF: for the habitat types that can have a non-priority as well as a priority form (6210, 7130, 9430) enter "X" in the column PF to indicate the priority form.

NP: in case that a habitat type no longer exists in the site enter: x (optional)

Cover: decimal values can be entered

Caves: for habitat types 8310, 8330 (caves) enter the number of caves if estimated surface is not available.

Data quality: G = 'Good' (e.g. based on surveys); M = 'Moderate' (e.g. based on partial data with some extrapolation); P = 'Poor' (e.g. rough estimation)

3.2 Species referred to in Article 4 of Directive 2009/147/EC and listed in Annex II of Directive 92/43/EEC and site evaluation for them

Species				Population in the site							Site assessment			
G	Code	Scientific Name	S	NP	T	Size		Unit	Cat.	D.qual.	A B C D		A B C	
						Min	Max				Pop.	Con.	Iso.	Glo.
F	6155	Achondrostoma arcasii			p				P	DD	C	C	C	C
I	6170	Actias isabellae			p				P	DD	C	B	B	C
B	A079	Aegypius monachus			c				V	DD	D			
B	A247	Alauda arvensis			p				P	DD	C	C	C	C
B	A229	Alcedo atthis			p				P	DD	C	B	C	C
B	A255	Anthus campestris			r				P	DD	C	B	C	B
B	A226	Apus apus			r				P	DD	C	C	C	C
B	A228	Apus melba			r				P	DD	C	B	C	B
B	A091	Aquila chrysaetos			p	2	2	p		G	C	A	C	B
I	1092	Austropotamobius pallipes			p	4	5	localities		G	C	C	A	B
B	A224	Caprimulgus europaeus			r				P	DD	C	B	C	B
B	A365	Carduelis spinus			c				P	DD	C	C	C	C
B	A365	Carduelis spinus			w				P	DD	C	C	C	C
B	A264	Cinclus cinclus			p				P	DD	C	B	C	C

B	A080	Circus gallicus			r	2	2	p		P	C	A	C	B
B	A207	Columba oenas			p				P	DD	C	C	C	C
B	A208	Columba palumbus			p				C	DD	C	B	C	B
B	A212	Cuculus canorus			r				C	DD	C	B	C	B
B	A253	Delichon urbica			r				C	DD	C	B	C	B
B	A379	Emberiza hortulana			r				P	DD	C	B	C	B
B	A269	Erithacus rubecula			p				C	DD	C	B	C	B
I	6199	Euplagia quadripunctaria			p	-1				DD	D			
B	A103	Falco peregrinus			p	1	2	p		P	C	B	C	B
B	A359	Fringilla coelebs			p				C	DD	C	B	C	B
B	A245	Galerida theklae			p				P	DD	C	B	C	B
B	A078	Gyps fulvus			p	5	5	p		G	C	B	C	C
B	A093	Hieraaetus fasciatus			c				P	DD	D			
B	A092	Hieraaetus pennatus			r				P	DD	C	B	C	C
B	A300	Hippolais polyglotta			r				P	DD	C	C	C	C
B	A251	Hirundo rustica			r				P	DD	C	C	C	C
B	A233	Jynx torquilla			r				P	DD	C	C	C	C
B	A341	Lanius senator			r				P	DD	C	C	C	C
B	A246	Lullula arborea			p				P	DD	C	B	C	B
B	A271	Luscinia megarhynchos			p				C	DD	C	B	C	B
M	1355	Lutra lutra			p				P	DD	D			
B	A230	Merops apiaster			r				P	DD	C	C	C	C
B	A073	Milvus migrans			c				P	DD	C	B	C	C
M	1310	Miniopterus schreibersii				-1				DD	D			
B	A280	Monticola saxatilis			r				P	DD	C	C	C	C
B	A262	Motacilla alba			p				P	DD	C	C	C	C
B	A077	Neophron percnopterus			r	1	2	p		M	C	B	C	B
B	A278	Oenanthe hispanica			r				P	DD	C	C	C	C
B	A279	Oenanthe leucura			p				P	DD	C	B	C	C
B	A277	Oenanthe oenanthe			r				P	DD	C	C	C	C
B	A337	Oriolus oriolus			r				P	DD	C	C	C	C
B	A214	Otus scops			r				P	DD	C	C	C	C
F	5292	Parachondrostoma miegii			p				P	DD	C	C	C	C
B	A273	Phoenicurus ochruros			p				C	DD	C	B	C	B
B	A313	Phylloscopus bonelli			r				C	DD	C	B	C	B
B	A315	Phylloscopus collybita			p				C	DD	C	B	C	B
B	A315	Phylloscopus collybita			w				P	DD	C	B	C	B
B	A267	Prunella collaris			w				P	DD	C	B	C	B
B	A266	Prunella			p				P	DD	C	C	B	C

B	A276	Saxicola torquatus						P					X	X
B	A332	Sitta europaea						P					X	X
F		Squalius laietanus						R			X			
F		Squalius laietanus						R			X			
B	A219	Strix aluco						P					X	X
M	5861	Sus scrofa						C						X
B	A305	Sylvia melanocephala						P					X	X
B	A213	Tyto alba						P					X	X

Group: A = Amphibians, B = Birds, F = Fish, Fu = Fungi, I = Invertebrates, L = Lichens, M = Mammals, P = Plants, R = Reptiles

CODE: for Birds, Annex IV and V species the code as provided in the reference portal should be used in addition to the scientific name

S: in case that the data on species are sensitive and therefore have to be blocked for any public access enter: yes

NP: in case that a species is no longer present in the site enter: x (optional)

Unit: i = individuals, p = pairs or other units according to the standard list of population units and codes in accordance with Article 12 and 17 reporting, (see [reference portal](#))

Cat.: Abundance categories: C = common, R = rare, V = very rare, P = present

Motivation categories: IV, V: Annex Species (Habitats Directive), **A:** National Red List data; **B:** Endemics; **C:** International Conventions; **D:** other reasons

4. SITE DESCRIPTION

4.1 General site character

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Habitat class	% Cover
N18	18.0
N22	2.0
N15	2.0
N17	17.0
N21	3.0
N08	3.0
N19	51.0
N12	2.0
N23	2.0
Total Habitat Cover	100

Other Site Characteristics

Espacio de gran interés enmarcado en las sierras carbonatadas situadas en el extremo oriental de la provincia de Teruel en contacto con las sierras castellonenses y tarraconenses, que tienen en este sector un claro dispositivo NE-SW, alcanzando las máximas cotas altitudinales en la sierra de Encanadé (1393m). Importante sistema de cuevas y crestas resultado del plegamiento de los estratos calcáreos. En la parte occidental las sierras de Beceite entran en contacto discordante con las formaciones detríticas terciarias, conglomerados, areniscas y arcillas. La red fluvial, constituida por la cabecera del río Matarraña y sus principales colectores, (Tastavins, Pena, Uldemo) disecciona las calizas formando profundos cañones y gargantas fluviookársticas de gran interés, que albergan interesantes comunidades rupícolas de fauna y flora. La riqueza y variedad de las comunidades vegetales está condicionada por el dispositivo orográfico y morfoestructural y la alternancia de solanas y umbrías. Dominan las comunidades mesomediterráneas encabezadas por el carrascal que en algunos sectores se combina con el encinar de *Quercus ilex*. La mayor parte del espacio está cubierto por bosques de *Pinus nigra* y *Pinus halepensis* en los segmentos más deprimidos. En las zonas mejor orientadas, con mejores suelos y mayor altitud encontramos pinares de *Pinus sylvestris* con sotobosque de *Buxus sempervirens* y algunos rodales relictos de *Quercus faginea*. Las zonas más degradadas son dominantes los matorrales

subesclerófilos constituidos principalmente por romerales y aliagares con pastizal seco. Las principales actividades se centran en la explotación de los recursos naturales en clave turística, con un moderado aprovechamiento agropecuario.

4.2 Quality and importance

Espacio de gran interés por la riqueza paisajística y las variedades de comunidades vegetales presentes en la zona, destacando los encinares y pinares. Es igualmente un espacio de gran riqueza faunística.

4.3 Threats, pressures and activities with impacts on the site

The most important impacts and activities with high effect on the site

Negative Impacts			
Rank	Threats and pressures [code]	Pollution (optional) [code]	inside/outside [i o b]
L	J03.02		i
M	A05.01		b
L	G01.02		i
M	I01		i
M	F03.01		i
M	F02.03		i
M	J01		b
L	G01.03		i
L	G01.04		i
M	F03.02.03		i
M	D02.01		i
H	J02.05		i
M	E06		o

Positive Impacts			
Rank	Activities, management [code]	Pollution (optional) [code]	inside/outside [i o b]
	X		-

Rank: H = high, M = medium, L = low

Pollution: N = Nitrogen input, P = Phosphor/Phosphate input, A = Acid input/acidification, T = toxic inorganic chemicals, O = toxic organic chemicals, X = Mixed pollutions

i = inside, o = outside, b = both

4.4 Ownership (optional)

Type	[%]	
Public	National/Federal	0
	State/Province	0
	Local/Municipal	0
	Any Public	12.69
Joint or Co-Ownership	0	
Private	0	
Unknown	0	
sum	12.69	

4.5 Documentation

IBÁÑEZ, M.J. (1976): "El piedemonte ibérico bajoaragonés. Estudio geomorfológico." CSICPEÑA, J.L., GUTIERREZ, M., IBAÑEZ, M.J., LOZANO, M.V., RODRIGUEZ, J., SANCHEZ, M., SIMON, J.L., SORIANO, M.A. y YETANO, M., (1984): "Geomorfología de la provincia de Teruel. Instituto de Estudios Turolenses. GUTIERREZ ELORZA, M., PEÑA MONNÉ, J.L. (1990): "Las formas de relieve de la provincia de Teruel". Cartillas turolenses nº7.

5. SITE PROTECTION STATUS (optional)

5.1 Designation types at national and regional level:

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Code	Cover [%]	Code	Cover [%]	Code	Cover [%]
ES00	100.0				

5.2 Relation of the described site with other sites:

5.3 Site designation (optional)

6. SITE MANAGEMENT

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6.1 Body(ies) responsible for the site management:

Organisation:	Dirección General de Sostenibilidad. Departamento de Desarrollo Rural y Sostenibilidad. Gobierno de Aragón
Address:	San Pedro Nolasco, 7 50071 - ZARAGOZA
Email:	sostenibilidad@aragon.es

6.2 Management Plan(s):

An actual management plan does exist:

<input type="checkbox"/>	Yes
<input checked="" type="checkbox"/>	No, but in preparation
<input type="checkbox"/>	No

6.3 Conservation measures (optional)

7. MAP OF THE SITES

“REVALORIZACIÓN DEL ACEITE OBTENIDO DE OLIVOS MONUMENTALES, CARACTERIZACIÓN Y TIPIFICACIÓN DE LOS MISMOS. GENOTIPADO DE LOS OLIVOS SINGULARES”

(2009-2012)

AUTORES: Antònia Ninot Cort *
Agustí Romero *

CENTRO: (*) IRTA. Centre ‘Mas de Bover’
Ctra. Reus-El Morell, km. 3,8
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977 32 84 24

Resumen

- Se ha fenotipado 825 olivos monumentales (OM) del Territori del Sènia (TdS), de los cuales 558 claramente pertenecen a la variedad ‘Farga’
 - Se ha genotipado 286 OM, de los cuales 74 ejemplares tienen un perfil genético idéntico a la variedad ‘Farga’
 - Se ha detectado variabilidad genética intra-varietal en ‘Farga’, 190 OM presentan diferencias hasta en 3 locis.
 - Se han identificado ejemplares de OM de variedades tradicionales de la zona (‘Morrut’, ‘Sevillença’, ‘Canetera’ y ‘Mançanal’)
 - Se ha detectado una variedad ancestral sin catalogar caracterizada por tener la curvatura del limbo en forma helicoidal y con una gran calidad de aceite y 8 OM con un perfil molecular único (olivos singulares).
 - Se ha caracterizado el aceite de la variedad ‘Farga’, ‘Mançanal’, la variedad no catalogada (Helicoidal) y los 8 olivos singulares
 - Se han detectado evidencias fisiológicas entre los árboles multicientenarios y jóvenes.
-

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DETERMINACIÓN DEL GENOTIPO DE LOS OLIVOS MONUMENTALES.

I. Caracterización fenotípica de los olivos monumentales

A partir del catálogo realizado por la Mancomunitat Taula del Sénia (Senar, 2009) se escogieron los olivos monumentales (OM) de categoría M3 y superior para realizar el estudio exhaustivo de la determinación de la variedad a la cual pertenecen los olivos catalogados. Durante la cosecha 2009 se visitaron para recoger muestra de fruto todos aquellos OM de categoría M3 o superior (olivos con un perímetro superior, en general, de más de 5m. a 1,30m. del suelo) para determinar la variedad a la cual pertenecían. En la Tabla 1 se muestra la distribución de los olivos según municipio y en el anejo 1 la relación de los OM muestreados. Los olivos que no se pudieron recoger muestra de fruto, son en general árboles abandonados o que habían sido cosechados previamente a la visita realizada por nosotros. De cada olivo monumental se recogieron 25 frutos y 10 hojas por pie de olivo. Se fotografió en campo el fruto y la hoja sobre una plantilla, lo cual permite establecer el tamaño y forma aproximada de las hojas y frutos en laboratorio. Se anotó en campo todo aquello relevante del olivo muestreado, en particular se anotaron los árboles con rebrotes jóvenes principalmente nacidos directamente del suelo y que están injertados de una variedad diferente al cultivar 'Farga', una de las variedades tradicionales de la zona. Si el olivo estaba formado por más de un pie (observación 9 del catálogo M-TdS) (Senar, 2009) se recogieron muestras independientes de cada pie que forman el árbol. Se puso especial atención en detectar rebrotes francos, cuando se detectaban se recogieron muestra de fruto y hoja, independiente del pie principal que forma el olivo.

Tabla 1. Distribución municipal de los olivos monumentales, de categoría M3 o superior, visitadas y de las cuales se han muestreado hojas y frutos.

	Termino Municipal (TM)	Nº de olivos monumentales de categoría M3 o superior	Nº de olivos que se han recogido muestra de hoja y frutos
<i>Tarragona</i>	Alcanar	3	3
	Freginals	1	1
	Galera, La	0	--
	Godall	20	16
	Mas de Barberans	2	1
	Santa Bàrbara	0	--
	Sant Carles de la Ràpita	1	1
	Sénia, La	32	27
	Ulldecona	328	231
<i>Castellón</i>	Benicarló	13	8
	Càlig	16	15
	Canet lo Roig	315	218
	Cervera del Maestre	14	11
	Jana, La	283	232
	Rosell	8	7
	Traiguera	107	49
	Vinaròs	4	2
<i>Teruel</i>	Pena-roja de Tastavins	3	3
TOTAL		1150	825

Se visitaron 1150 olivos y se recogieron 918 muestras de aceituna y hoja (se contabiliza muestra del pie principal, pie secundario e incluso terciario en algún caso y los rebrotes del tronco que parecían diferentes a la variedad principal del árbol) los cuales representan a 825 árboles (ver Tabla 1).

En laboratorio se separó el endocarpio de las muestras recogidas y se procedió a discriminar, según morfología del hueso (Tous y Romero, 1993), y por comparación con referencias de huesos recogidos en la colección del Banco de Germoplasma de Mas de Bover, los olivos que *a priori* parecían ser de la variedad 'Farga' de las que claramente no lo eran. En la Tabla 2 se recogen los resultados obtenidos en el estudio de la morfología de la hoja y endocarpio del fruto.

Tabla 2. Clasificación de los olivos monumentales del Territori del Sénia por variedades, según la morfología de la hoja y endocarpio del fruto.

	TM	Nº olivos estudiados	Nº de olivos clasificados como			
			'Farga'	'Farga dudosa'	'Desconocida'	Otras variedades tradicionales
Tarragona	Alcanar	3	0	1	2	
	Freginals	1	1	0	0	
	Godall	16	13	1	2	
	Mas de Barberans	1	1	0	0	
	Sant Carles de la Ràpita	1	1	0	0	
	Sénia, La	27	15	0	12	
	Ulldecona	231	112	22	97	
Castellón	Benicarló	8	6	0	1	1 ('Morrut')
	Càlig	15	6	3	0	6 ('Morrut')
	Canet lo Roig	218	162	20	35	1 ('Sevillenca')
	Cervera del Maestre	11	9	0	1	1 ('Canetera')
	Jana, La	232	186	13	33	
	Rosell	7	4	0	3	
	Traiguera	49	42	2	5	
	Vinaròs	2	0	0	2	
<i>Teruel</i>	Pena-roja de Tastavins	3			3	
	TOTAL	825	558	62	196	9

II. Genotipado de los olivos monumentales

En Mayo de 2010, todos aquellos olivos que en la caracterización fenotípica no se pudo determinar claramente a que variedad pertenecían se recogieron muestras de hoja para analizarla por marcadores moleculares de ADN y así determinar su genotipo. En Mayo de 2011 se amplió el número de olivos analizados ya que se actualizó el catálogo de olivos monumentales y se añadieron alguno de los ejemplares de mayores dimensiones.

La técnica utilizada fue la de marcadores moleculares de ADN basados en repeticiones de secuencias simples (SSR) o microsatélites. Los olivos monumentales fueron genotipados por los siguientes locis: ssOeUA-DCA03, ssOeUA-DCA04, ssOeUA-DCA07, ssOeUA-DCA08, ssOeUA-DCA09, ssOeUA-DCA10, ssOeUA-DCA11, ssOeUA-DCA16, ssOeUA-DCA17 and ssOeUA-DCA18 (Sefc et al. 2000).

En total, a lo largo de los años de duración del proyecto (2009-2012), se han analizado 286 olivos repartidos por todo el territorio del Sénia. Se han obtenido 137 perfiles genéticos distintos. De los olivos monumentales analizados, 74 ejemplares mostraron un perfil idéntico entre sí y a la vez coincidente con el perfil molecular de la accesión 'Farga' del Banco de Germoplasma de olivo de Mas de Bover y que concuerda con la entrada 'Farga' en la base de datos OLEAdatabases (www.oleadb.it). Un total de 190 olivos presentaron hasta una diferencia máxima de 3 marcadores al perfil estándar de 'Farga' (ver Figura 1 y Tabla 3), de éstos la mayoría, (125 OM, 66%) presentan un sólo locus distinto. Se ha convenido aceptar que la variedad-población 'Farga' o denominación 'Farga' a todos aquellos olivos que poseen hasta 3 loci diferentes, de los 10 estudiados, del perfil estándar definido para la variedad 'Farga'.

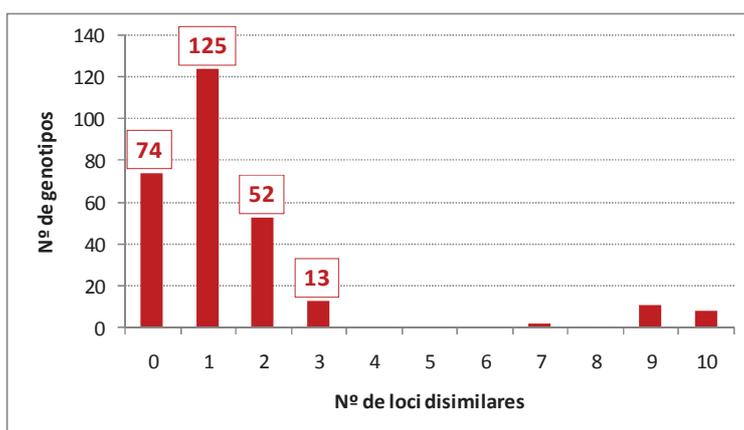


Figura 1.- Número de olivos monumentales según el número de loci disimilares al perfil estándar de 'Farga'.

Tabla 3. Clasificación de los olivos monumentales 'Farga' del Territori del Sénia según genotipo.

		ID Olivo
Olivos monumentales con perfil estándar de 'Farga'		36, 106, 150, 222, 235, 334, 534, 656b, 678, 703, 712, 725, 847, 874, 881, 915, 994, 1078, 1091, 1094, 1106, 1162, 1215, 1263, 1365, 1453, 1497, 1513, 1528, 1559, 1578, 1592, 1595b, 1615, 1690, 1691, 1701, 1878, 1891, 2054, 2115, 2187, 2206, 2236, 2240, 2327, 2387, 2497, 2605, 2613, 2614, 2732b, 2767, 2799, 2838, 2872, 2878, 2879, 2972, 3102, 3244, 3477, 3498, 3532, 3536, 3564, 3565, 3567, 3568, 3712, 3763, 3806, 3819, 3841
1 locus diferente		16, 52, 53, 117, 264, 300, 317, 339, 340, 362, 385, 403, 451, 578, 592, 626, 706b, 709, 710, 726, 752b, 758, 858, 868, 877, 902, 906, 960, 991, 1038, 1041, 1055, 1071, 1074, 1080, 1096, 1111, 1116, 1121, 1135, 1180, 1193, 1195, 1196, 1222, 1236, 1241, 1244, 1271, 1353, 1392, 1407, 1411, 1445, 1447, 1450, 1454, 1469, 1472, 1495, 1498, 1529, 1540, 1541a, 1547, 1549, 1552, 1558, 1576, 1595a, 1596, 1617, 1649, 1703, 1708, 1711, 1798, 1802, 1858, 1899, 1914, 1922, 1933, 1947, 1986, 2047, 2085, 2155, 2215, 2242, 2252, 2423, 2437, 2450, 2463, 2558, 2580, 2693, 2697, 2754, 2766, 2786, 2791, 2812, 2814, 2855, 2876, 2921, 2953, 3153, 3157, 3335, 3336, 3379, 3399, 3439, 3478, 3504, 3529, 3569, 3650, 3716, 3732, 3897, 3913
2 loci diferentes		189, 243, 290, 329, 454, 471, 577, 716, 752a, 767, 770, 895, 1114, 1129, 1139, 1198, 1309, 1362, 1432, 1439, 1448, 1470, 1525, 1542, 1546, 1554, 1580, 1723, 1785, 1786, 1915, 1930, 1932, 1950, 2078, 2159, 2449, 2811, 2819, 2821, 2853, 2866, 3012, 3069, 3097, 3139, 3257, 3370, 3497, 3823, 3940, 4136
3 loci diferentes		724, 111, 539, 706a, 711, 1073, 1541b, 2166, 2378, 2795, 3140, 3293, 3999

El OM con identificación 2426 de Benicarló pertenece a la variedad 'Canetera'. No se ha encontrado ningún otro olivo con perfil idéntico o muy parecido a otras variedades comerciales. Se han incluido en el estudio las 109 variedades del Banco de Germoplasma del olivo de Mas de Bover, entre las cuales hay 'Sevillenca', 'Cuquello', 'Marons', 'Serrana de Castelló', 'Morrut' i 'Empeltre'.

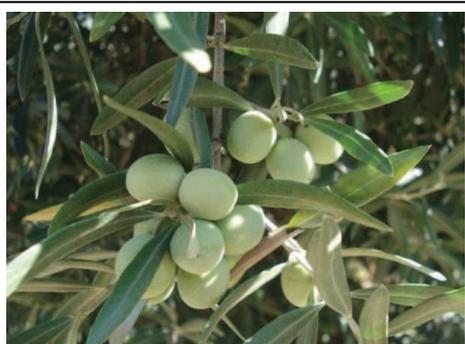


Foto 1.- Detalle de la hoja y fruto de la variedad 'Maçanal'.

Los tres OM del municipio de Pena-roja de Tastavins (134, 245 y 3036) tienen el mismo perfil genético y distinto a 'Empeltre' como se esperaba. Los agricultores de la zona comentaron que los olivos pertenecían a la variedad local 'Maçanal' difundida en la comarca del Matarranya (Foto 1). Entre ellos muestran pequeñas diferencias, hasta un máximo de 3 alelos distintos, probablemente a consecuencia de mutaciones somáticas en su genoma a lo largo del tiempo.

Los OM identificados como 132, 213b, 1473, 1536, 1538, 2281, 2284, 3366, 1090 y 3243, los cuales se caracterizan todos ellos por tener la curvatura longitudinal del limbo en forma helicoidal, con un fruto pequeño y presencia de pezón (Foto 2) son genéticamente muy distintos al resto de olivos monumentales analizados. Probablemente, su origen es distinto del resto de los OM analizados. Estos olivos pertenecen a una variedad ancestral, no catalogada hasta el momento, ampliamente difundida ya que se han localizado olivos con perfiles genéticos muy similares en la Ribera d'Ebre y Priorat (Tarragona), en Mallorca y en Valencia, conocida aquí como 'Morruda de Segorbe'. Los OM 1473 y 1538 comparten el mismo genotipo (los dos ubicados en la partida Arión de Ulldecona). Los OM 213b y 1536 también comparten el mismo genotipo entre ellos y asimismo los ejemplares 2284 y 3366. Entre ellos hay un máximo de 3 locus distintos de los 10 ejemplares analizados.



Foto 2.- Detalle de la hoja y fruto de la variedad no catalogada y difundida por el Territori del Sènia.

Un total de 8 OM tienen un perfil molecular no coincidente con ninguna de las accesiones del Banco de Germoplasma de Mas de Bover. Estos olivos son los identificados como 673, 993, 1070, 1123, 1702 de Ulldecona; la 154 y 2123 de La Jana y la 3856 de Traiguera. Los olivos 673 y 1123 presentan una similitud elevada con las variedades 'Serrana de Castelló' y 'Sevillenca', variedades tradicionales de la zona, indicando un posible origen en común. De la misma forma los olivos 1702 y 2123 presentan una similitud elevada con las variedades locales 'Arracada d'Aldover' y 'Godallera' respectivamente. Los OM 993, 2123, 1702, 1070 y 3856 posiblemente tiene un ancestro en común con la variedad 'Farga' ya que comparten el 50% del ADN con ésta variedad.

En la Tabla 4 se muestra el perfil estándar para la variedad 'Farga', y los genotipos que representan a la variedad local 'Maçanal', la no catalogada (Helicoidal) y los olivos singulares localizados.

Tabla 4. Perfiles genéticos que definen a la variedad 'Farga', y de los genotipos que representan a la variedad local 'Mançanal', la Helicoidal y los olivos singulares localizados

Genotipo/Loci	ssOeUA-DCA03	ssOeUA-DCA04	ssOeUA-DCA07	ssOeUA-DCA08	ssOeUA-DCA09	ssOeUA-DCA10	ssOeUA-DCA11	ssOeUA-DCA16	ssOeUA-DCA17	ssOeUA-DCA18	Observaciones
'Farga'	243:249	170:192	154:154	135:167	179:192	145:160	128:143	122:150	126:186	165:169	1a
'Mançanal'											
3036	247:253	168:192	154:170	143:143	169:179	160:160	164:164	124:150	112:114	171:179	1a
134; 245	247:253	168:192	154:170	141:143	169:179	160:199	164:164	124:150	112:114	171:179	1a
Helicoidal											
132	243:253	144:192	150:170	141:167	179:200	113:158	137:164	124:146	114:--	179:179	1b
213b	243:253	144:192	150:170	141:141	179:200	113:158	137:164	124:146	114:--	179:179	1b
1090	243:249:253	144:192	150:170	135:167	179:200	113:158	137:164	124:146	114:--	179:179	1b
1473	243:253	144:192	150:170	135:141:167	179:200	113:158	137:164	124:146	114:--	179:179	1b
1536	--	144:192	150:170	141:141	179:200	113:158	137:164	124:146	114:--	179:179	1b
1538	243:253	144:192	150:170	135:141:167	179:200	113:158	--	124:146	114:--	179:179	1b
2281	243:253	144:192	150:170	141:167	179:200	113:158	137:164	124:146	--	179:179	1b
2284	243:253	144:192	150:170	141:141	179:200	145:158	137:164	124:146	114:--	179:179	1b
3243	243:253	144:192	150:170	141:141	179:200	113:158	137:164	124:146	126:--	179:179	1b
3366	243:253	144:192	150:170	141:141	179:200	145:158	137:164	124:146	--	179:179	1b
Singulares											
154	243:253	161:168	152:154	137:139	190:200	145:160	143:164	122:160	114:--	173:175	1b
673	243:257	148:170	148:170	135:141:156	169:188	113:158:160	128:143	122:150	114:--	173:175	1b
993	243:247	159:192	154:170	156:167	179:179	145:148	128:143	122:124	114:--	169:179	1a; 2; 3
1070	249:253	192:192	154:170	141:167	179:200	145:160	143:150	150:156	114:--	169:171	1a; 2
1123	243:257	148:192	148:154	141:156	169:188	145:160	133:164	154:174	114:--	173:175	1b
1702	253:261	136:170	--	135:167	173:179	143:145	128:143	146:150	112:126	165:165	1a; 2; 3
2123	243:257	138:190:192	154:156	167:167	173:192	145:160	128:143	146:150	112:126	165:169	1a; 2; 3
3856	249:257	136:170	141:154	143:167	173:192	145:145	128:128	122:146	112:126	169:177	1a; 2

Los números indican la longitud alélica en bp

1a: Androestéril (sin producción viable de polen); 1b: producción viable de polen

2: Comparte el 50% del ADN con 'Farga'

3: Olivo con el mismo perfil genético entre la copa del árbol y los rebrotes del pie

En la Tabla 5 se observa los principales parámetros genéticos de la población de OM del Territori del Sènia, para la confección de esta tabla, se han eliminado del estudio el locus ssOeUA-DCA17 ya que no se pudo amplificar, en todos los casos, la zona donde se sitúa uno de los dos alelos que lo forman.

Para los 9 loci analizados, la población de olivos monumentales del Territori del Sènia ha amplificado 96 alelos, con una media de 10.7 alelos/locus. El número de alelos por locus varía desde los 7 (ssOeUA-DCA03) hasta los 22 (ssOeUA-DCA04). Más de la mitad de estos alelos se encuentran en una frecuencia inferior al 1%. La heterosis observada (H_O) es el número de individuos heterocigóticos encontrados en la población analizada. Los OM del Territori del Sènia analizados poseen una H_O media del orden de 0.905 y varió desde 0.248 (ssOeUA-DCA07) a 1.000 (ssOeUA-DCA03 y ssOeUA-DCA16). La heterosis esperada (H_E) es una estimación del grado de variabilidad genética en la población. En este estudio, la H_E media ha sido de 0.546 y osciló entre 0.259 (ssOeUA-DCA07) y 0.703 (ssOeUA-DCA04). Con la excepción del locus ssOeUA-DCA07, la H_E fue siempre inferior a la H_O , lo que indica que el estudio realizado refleja realmente la variabilidad de la población. Solamente para el locus ssOeUA-DCA07 (frecuencia de alelos nulos positiva) puede existir una sobreestimación del nivel de homocigosis, debido a la existencia de alelos nulos que enmascaran la lectura obtenida.

El contenido en información polimórfica (PIC) representa las posibles combinaciones entre los distintos alelos obtenidos, por lo que es un índice de la capacidad informativa de cada uno de los microsatélites utilizados. El PIC medio obtenido ha sido de 0.464, mientras que de forma individual osciló entre el 0.247 (ssOeUA-DCA07) y 0.656 (ssOeUA-DCA04), siendo éste último el locus más informativo de los 9 analizados.

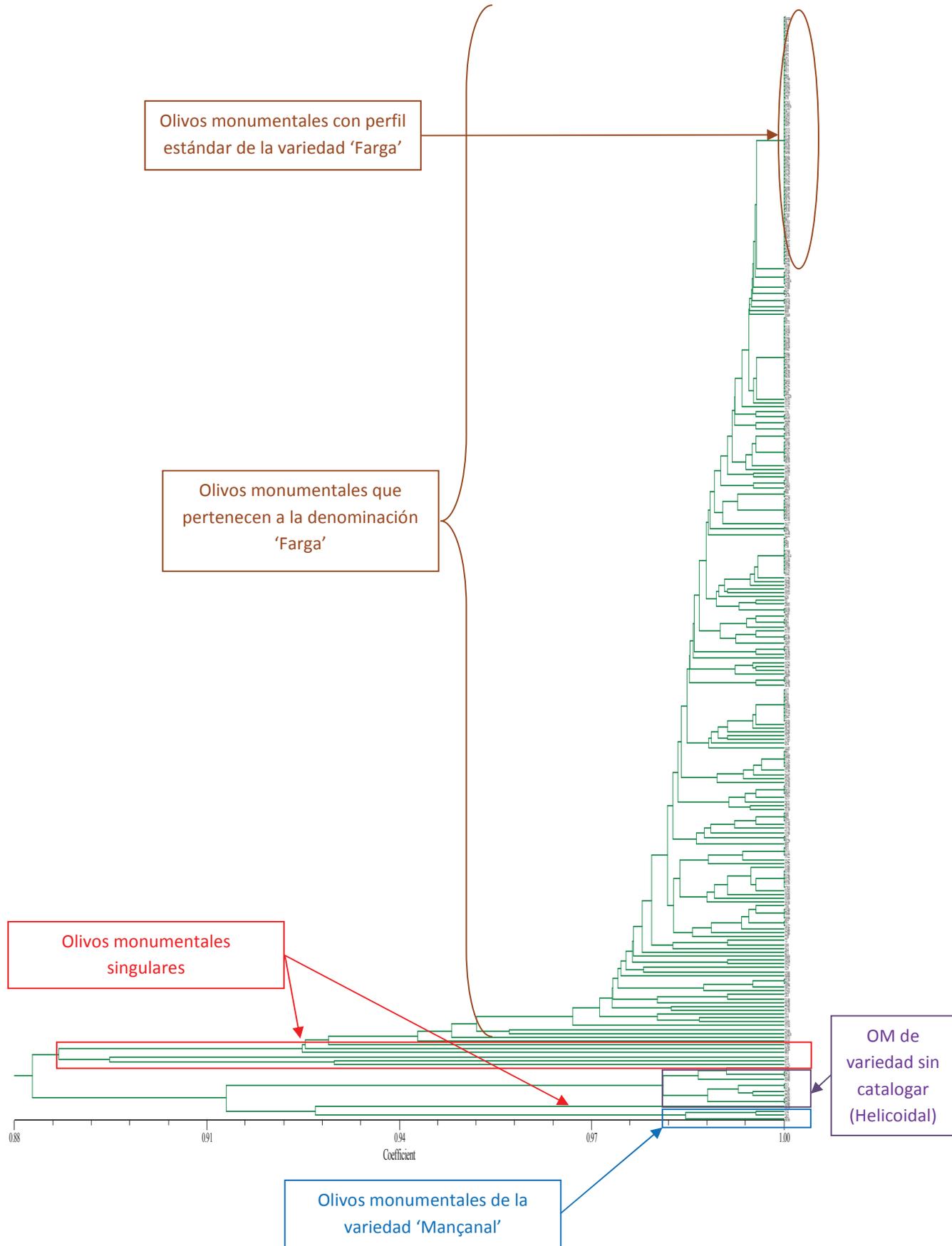
Tabla 5. Principales parámetros genéticos de la población de olivos monumentales del Territori del Sènia (olivos analizados 285).

Locus	N_A	H_O	H_E	F(Null)	PIC
ssOeUA-DCA03	7	1.000	0.553	-0.3023	0.452
ssOeUA-DCA04	22	0.996	0.703	-0.1968	0.656
ssOeUA-DCA07	8	0.248	0.259	+0.0582	0.247
ssOeUA-DCA08	12	0.974	0.589	-0.2722	0.502
ssOeUA-DCA09	12	0.996	0.567	-0.2928	0.472
ssOeUA-DCA10	11	0.985	0.563	-0.2881	0.467
ssOeUA-DCA11	7	0.982	0.546	-0.3000	0.441
ssOeUA-DCA16	8	1.000	0.553	-0.3008	0.452
ssOeUA-DCA18	9	0.960	0.579	-0.2748	0.488
Media	10.7	0.905	0.546	-----	0.464

NA: número de alelos; H_O : Heterosis observada; H_E : Heterosis esperada; F(Null): Frecuencia de alelos nulos; PIC: Contenido en información polimórfica.

La distancia genética entre dos muestras es la proporción de elementos genéticos (alelos) que no son compartidos entre dos muestras. La distancia genética varía entre 0 y 1, cero si los individuos son idénticos y 1 cuando no tienen ningún alelo en común. Con este parámetro se ha confeccionado un dendrograma de relaciones genéticas entre los olivos monumentales analizados que se muestra en la Figura 2.

Fig. 2.- Relaciones genéticas entre los olivos monumentales del Territori del Sénia



III. Identificación de genotipos de olivos monumentales formados por más de un pie

Los olivos 678, 709, 726, 1469, 3477 y 3478, los cuales están formados por 2 troncos desde la base, se analizaron hojas de las 2 copas que forman el árbol por marcadores moleculares de ADN y resultaron ser genéticamente idénticos entre sí. Se han analizado los olivos 2115 y 2116, (La Jana, Pol. 7 parc. 475); los 2766 y 2767 (Canet lo Roig, Pol. 62 parc. 38) y el 2732 (Canet lo Roig, Pol. 53 parc. 125), los cuales están formados por más de un pie y a veces se duda si son el mismo ejemplar. Se recogió muestra de hoja de los rebrotes nacidos de los dos pies que componen el olivo para determinar si estos rebrotes provienen de una sola raíz o bien son dos raíces diferentes. Los resultados obtenidos indican que ninguno de los tres olivos analizados son una única identidad genética, como ya se pensaba en los olivos 2115-2116 i 2766-2767, mientras que el olivo 2732 está catalogado como único y realmente son dos. En este último caso el análisis detallado de los perfiles genéticos indican que muy probablemente los dos olivos que componen el 2732 son semillas que provienen de un mismo árbol original. La riqueza alélica encontrada en esta parte basal del olivo es muy elevada (se han detectado muchos alelos raros). El análisis de estos olivos ha evidenciado la gran diversidad genética que existe entre los patrones utilizados y permite conocer la genética de los acebuches o paleo-variedades en los cuales están injertados los olivos monumentales.

IV. Otros análisis

Con el objetivo de conocer si la propagación por injerto era práctica habitual en la zona del Sénia en tiempos remotos, se analizó por los mismos marcadores moleculares de ADN, los rebrotes del pie de 18 olivos, de los cuales los 8 OM singulares y una muestra representativa de la variedad 'Farga' y 'Helicoidal'. Los OM singulares identificados como 993, 2123 y 1702 son los únicos que muestran que son una única identidad, es decir provienen de una propagación vegetativa por estaca o lo más probable por propagación sexual de semilla. El resto de olivos analizados presenta un perfil genético distinto entre la copa del árbol y el pie del mismo indicando que la técnica de propagación por injerto en la zona del Sénia era una práctica habitual ya en tiempos remotos.

V. Características agronómicas de los olivos monumentales

El origen de la variedad 'Farga' es desconocido y comparte un haplotipo raro con la antigua variedad francesa del Languedoc 'Oliviere' y con acebuches de la isla de Menorca (Besnard et al., 2011). Ambas variedades se caracteriza por ser variedades androestériles, es decir no producen polen viable en sus anteras (Foto 3). Este fenómeno proviene de una mutación en el citoplasma que se hereda por vía materna (Besnard et al., 2000). También se ha observado androesterilidad en la variedad 'San Giovanni di Venere' (antiguo olivo Italiano de la región de Abruzzo), probablemente estas variedades tienen un origen materno común.

En primavera del año 2011, cuando los olivos estaban en plena floración, se visitaron todas los olivos de



Foto 3.- Androesterilidad. Anteras sin producción de polen.

la denominación 'Farga' que poseían en su genoma una tasa de mutaciones más altas, los 10 olivos de la variedad no catalogada 'Helicoidal', los 8 olivos singulares, y los olivos de la variedad 'Manzanal' y se observó la presencia de polen en sus flores. Las observaciones realizadas mostraron que todos los olivos catalogados como 'Farga' son androestériles, en ningún caso se encontró presencia de polen en sus anteras. La poca cantidad de flores producidas en los tres olivos de la variedad 'Maçanal' hizo difícil la observación de éste carácter, aún por confirmar, parece que esta variedad es también androestéril. La variedad 'Helicoidal' produce

polen normalmente y los olivos singulares a excepción del 154, 673 y 1123 son también androestériles (ver Tabla 3).

En otoño de 2011, coincidiendo con un ataque anormalmente severo de la mosca de la aceituna (*Bactrocera oleae*), se observó la incidencia del ataque a los olivos de la variedad 'Helicoidal' y los olivos monumentales singulares. Por otra parte las condiciones de extrema sequía que sufrieron los olivos en el verano del mismo año dificultaron la observación de la sensibilidad varietal a la mosca (Foto 4 y 5).

Los olivos helicoidales, en general, no tenían producción a excepción de tres olivos, y la observación de estos mostró que no son especialmente sensibles al ataque de mosca. Los olivos singulares emparentados con la variedad 'Farga' (993, 1070, 1702, 2123 y 3856) tienen una sensibilidad muy parecida a la variedad 'Farga'. El olivo 1123 presenta una sensibilidad superior y los olivos 673 y 154 que mostraron una sensibilidad extraordinaria a mosca.



Foto 4.- Presencia de *Bactrocera oleae* en la oliva



Foto 5.- Galería producida por mosca

En la campaña 2012 todas aquellas parcelas que participan en la elaboración del aceite de la marca 'Aceite de Olivos Milenarios' controlaron el ataque de mosca por medio de trampas cebo-alimenticias, lo cual mejoró el control a dicha plaga. Se observó también los mismos ejemplares que el año anterior constatando en general poca incidencia a mosca. Cabe destacar la poca sensibilidad de la variedad 'Helicoidal' y la alta sensibilidad del olivo 673.

VI. Caracterización del aceite de los olivos singulares

Durante la campaña 2010 se recogieron 119 muestras de aceitunas de los olivos monumentales del Territori del Sénia, que representan a los distintos perfiles genéticos. En la cosecha de 2011 se recogieron muestra de aceituna de los olivos 134 y 245 de Pena-roja de Tastavins que pertenecen a la variedad 'Mançanal' para caracterizar su aceite, ya que se desconocen sus características. El olivo 3036 no tenía producción.

La muestra de aceitunas se recogió en cajas (2-3kg) y la extracción del aceite se realizó en menos de 24 horas a su cosecha en la Planta piloto de aceites del IRTA-Mas de Bover (Constantí), mediante el sistema Abencor (Abengoa SA, Sevilla) el cual reproduce el proceso industrial a escala de laboratorio. A la llegada del fruto al laboratorio se determinó el índice de madurez de las aceitunas, el peso del fruto, el contenido de aceite y la humedad de la pasta de aceituna.

De la muestra de aceite obtenido se han determinado los siguientes parámetros analíticos:

- Contenido de pigmentos en el aceite, clorofilas i carotenoides totales, por espectrofotometría.
- Estabilidad oxidativa medida por el método Rancimat en horas a 120°C
- Color del aceite en unidades CIELab L, a*, b*):

$$\text{Croma} = \sqrt{a^{*2} + b^{*2}}$$

- Contenido en ácidos grasos por cromatografía de gases.
- Susceptibilidad oxidativa de los ácidos grasos (SO):

$$SO = AAGG_{\text{monoinsaturats}} + (45 * ac. \textit{linoleic}) + (100 * ac. \textit{linolènic})$$

Los resultados se muestran en las Tablas 6 y 7 y figura 3. En la cosecha, sólo el olivo 673 presentó una maduración tardía respecto al resto de olivos. Destaca los olivos singulares 1070 en cuanto a tamaño de fruto y el 1702 en cuanto a rendimiento en aceite. En general el aceite obtenido de todas las variedades muestran un buen comportamiento de estabilidad a la oxidación, destaca por encima de las demás la variedad 'Helicoidal'. Solamente el olivo singular 1123 y la variedad local 'Mançanal' tienen una estabilidad reducida (inferior a la variedad 'Arbequina'). En cuanto a la composición en ácidos grasos todas las muestras, a excepción de la variedad local 'Mançanal' (árbol 245: contenido en ácido linolénico superior al 1%), entran dentro de la normativa. El ácido graso palmítico (C16:0) es un poco elevado en las muestras 1123, 3856 y en 'Mançanal', lo que puede provocar cristalizaciones al aceite en el almacén durante los meses de invierno. Por lo que respecta al ácido oleico (C18: 1), principal ácido graso en el aceite de oliva, el valor máximo observado corresponde a la variedad 'Helicoidal' y el menor contenido en la variedad 'Mançanal'.

La composición en ácidos grasos determina la susceptibilidad a la oxidación del aceite a igualdad de factores de protección (antioxidantes presentes en el aceite). La variedad no catalogada 'Helicoidal'

presenta un buen sustrato en composición de ácidos grasos (SO = 362) a la vez que tiene una muy alta estabilidad oxidativa, por lo que esta variedad puede ser muy interesante para hacer *coupages* con variedades que tengan un vida útil corta.

En la figura 3 se puede comparar la calidad de los aceites obtenidos de los olivos monumentales. La variedad 'Helicoidal' es claramente superior a la calidad del aceite 'Farga', mientras que la variedad 'Mançanal' y los olivos singulares 1070 y 1123 son claramente inferiores en calidad a la variedad 'Farga'. Los olivos singulares 154, 1702 y 3856 tiene una calidad parecida a 'Farga' y los olivos 673, 2123 y 993 tienen una calidad algo inferior.

Tabla 6.- Peso de la oliva, rendimiento graso, pigmentos totales, estabilidad oxidativa y color de las muestras analizadas.

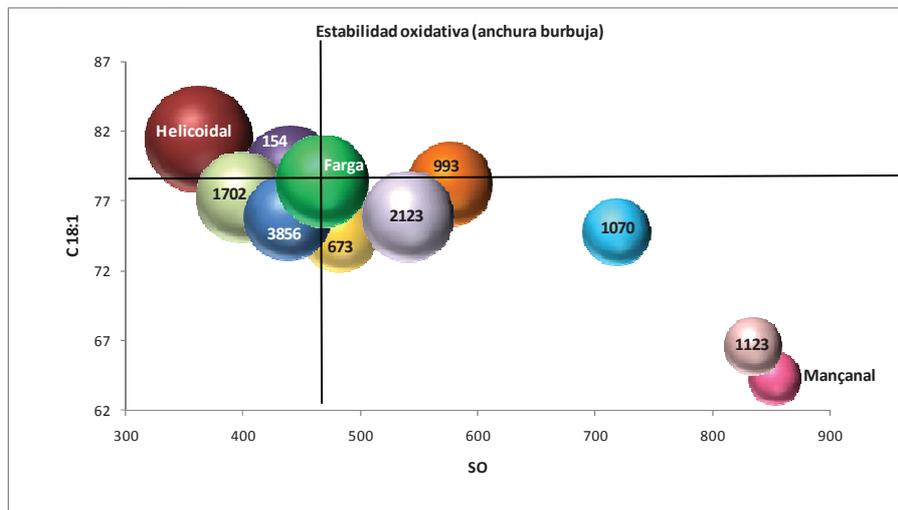
Variedad	IM*	Peso del fruto (g)	Rendimiento (%sms)	Pigmentos (mg/kg)		Rancimat (h)	Croma
				[Clorofilas totales]	[Carotenoides totales]		
'Farga'	3,1	1,63	46,2	23,0	12,1	21,9	95,1
'Helicoidal'	3,5	1,51	39,2	23,1	12,9	30,1	107,2
Singulares							
154	2,3	1,47	33,4	26,5	13,9	23,8	110,5
673	1,5	1,78	44,9	40,6	17,7	15,3	119,6
1123	3,0	1,68	46,8	16,0	9,4	8,7	93,8
993	3,7	1,47	32,9	27,7	15,5	18,4	117,7
1070	3,9	2,30	47,0	13,4	7,3	11,9	71,3
1702	3,3	1,91	51,5	11,2	7,7	21,9	70,3
2123	2,6	1,52	39,1	52,0	23,6	21,8	110,7
3856	3,2	1,92	37,1	18,8	11,9	19,6	115,1
'Mançanal'							
134	3,2	1,65	32,2	36,3	19,7	6,6	104,6
245	2,8	1,31	36,9	34,1	21,8	7,8	92,6

IM: Índice de madurez. Escala de 1 a 7

Tabla 7.- Contenido en ácidos grasos y susceptibilidad oxidativa (SO) de las muestras analizadas.

Variedad	Contenido en ácidos grasos (%)										SO
	C 16:0	C 16:1	C 17:0	C 17:1	C 18:0	C 18:1	C 18:2	C 18:3	C 20:0	C 20:1	
Farga	10,92	0,64	0,01	0,07	1,65	78,45	7,48	0,47	0,17	0,13	463
Helicoidal	10,14	0,52	0,00	0,07	1,91	81,47	5,10	0,50	0,18	0,11	362
Singulares											
154	10,61	0,48	0,12	0,20	2,12	79,06	6,04	0,88	0,25	0,23	440
673	12,93	0,56	0,21	0,32	2,38	74,63	7,99	0,47	0,33	0,18	482
1123	14,60	0,55	0,00	0,18	1,50	66,64	15,57	0,66	0,20	0,12	834
993	9,42	0,46	0,00	0,05	1,50	78,19	9,26	0,81	0,16	0,15	576
1070	9,29	0,48	0,00	0,09	1,41	74,82	13,11	0,53	0,18	0,10	718
1702	13,60	0,62	0,00	0,07	1,41	77,29	6,41	0,31	0,22	0,06	398
2123	11,83	0,49	0,00	0,07	1,86	75,93	8,80	0,68	0,20	0,13	540
3856	14,03	0,99	0,06	0,16	1,44	75,85	6,30	0,77	0,30	0,10	437
'Mançanal'											
134	14,25	0,49	0,21	0,22	3,64	65,03	14,76	0,92	0,29	0,19	821
245	14,41	0,54	0,24	0,24	3,66	63,59	15,69	1,16	0,31	0,16	885

Figura 3.-Calidad del aceite de los olivos singulares, helicoidales, y de las variedades 'Mañanar' y 'Farga'



COMPARACIÓN DE LAS CARACTERÍSTICAS DEL ACEITE PROCEDENTE DE LOS OLIVOS MONUMENTALES VS. OLIVOS JÓVENES.

La longevidad en los árboles viene determinada por factores externos y como consecuencia indirecta del aumento del tamaño de los árboles, y no por procesos de senescencia. La teoría de la limitación hidráulica, la cual sustenta que para evitar el embolismo, en árboles muy voluminosos, y debido al aumento de la resistencia al ascenso del agua de las raíces a la copa, el árbol cierra los estomas, en lo que utilizará menos agua y la succión será menor. Esto se traduce con una entrada menor de CO₂ en las hojas y consecuentemente un crecimiento menor del árbol (Ryan y Yoder, 1996; Ryan et al., 2006). En los últimos años el conocimiento de la morfología y de la fisiología en árboles viejos ha aumentado considerablemente y se ha visto que son diferentes en muchos aspectos a los árboles jóvenes. Los estudios muestran que los árboles más viejos tienen menor conductancia estomática al vapor de agua, fotosíntesis, potencial de hoja y presión de turgencia, pero más elevada el área específica foliar (Ryan et al., 2006).

Con las premisas anteriores se planteó en el proyecto estudiar las características de los aceites de olivos monumentales y de olivos jóvenes para determinar si la edad del árbol influye en la calidad del aceite obtenido. A lo largo del proyecto se han hecho diversos llamamientos a los olivicultores de la zona para localizar olivos jóvenes de la variedad 'Farga'. Atendiendo a los reclamos varios agricultores ofrecieron árboles jóvenes de sus fincas. Se visitaron olivos en el término municipal de Godall los cuales se rechazaron ya que éstos estaban en un terreno muy árido y muy poco representativo de la zona y además no había ningún olivo monumental en las cercanías que estuviera en las mismas condiciones edafológicas. También se descartaron unos olivos en el TM de La Jana porque no eran tan jóvenes como se quería para el ensayo y en la misma propiedad no había olivos monumentales. En Ulldecona se recogió muestra de hojas de olivos jóvenes, que respondían a las exigencias planteadas, para analizarlas molecularmente. Los resultados concluyeron que eran olivos de la variedad 'Empeltre', por lo que no eran válidas para este estudio. En La Jana y en Càlig se localizaron olivos jóvenes y se procedió a hacer el mismo proceso anterior, resultando también que los olivos no eran de la variedad 'Farga', por lo que no es válido para este estudio.

Finalmente se localizó un ensayo experimental de variedades tradicionales, realizado por la Generalitat Valenciana, que compara variedades locales de la zona ('Farga', 'Picudo', 'Canetera') con la variedad 'Arbequina i-18'. El ensayo está ubicado en el TM de La Jana y está cultivado en secano y en regadío. Hemos contactado con el técnico responsable el Sr. Juan García Gazapo (IVIA; Valencia), que nos informó del ensayo. Los olivos se plantaron en 2008 y a la finalización del proyecto son todavía improductivos. Es un ensayo rodeado de olivos monumentales en la misma finca y es ideal para realizar este estudio cuando los árboles entren en producción.

A la vista de la no existencia de árboles 'Farga' jóvenes y con producción de aceituna, se optó por estudiar si la captación de agua entre olivos milenarios y olivos adultos se realiza en el mismo nivel de la capa freática. Para ello se analizó el contenido en el isótopo ¹⁸O del agua xilemática contenida en ramillas de la copa de los árboles, ya que ésta procede directamente de las raíces del olivo y sabiendo que el agua superficial está más enriquecida en el isótopo pesado del oxígeno (¹⁸O).

En Ulldecona, partida del Arión, se localizaron tres olivos de perímetro de tronco de unos 50 cm (ver foto 6) y los resultados de ADN concluyeron que pertenecían a la variedad 'Farga'. En el momento del endurecimiento del hueso (Julio) se recogieron dos ramillas por árbol de los tres olivos de mediana edad

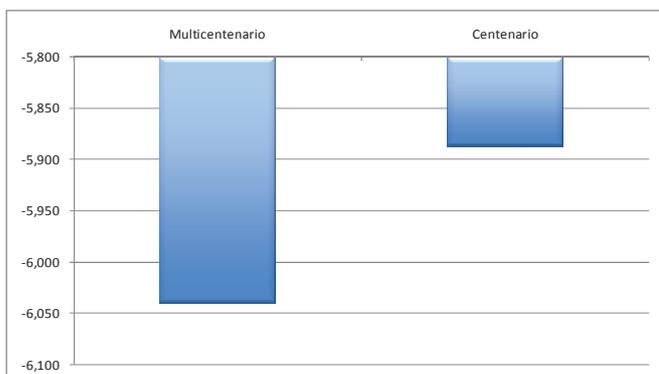
y de siete olivos monumentales cercanos a ellos en la misma finca. Se procedió a extraer el agua que contenía el xilema de las ramillas, primero en campo realizando una crioconservación de las ramillas *in situ* y luego en laboratorio mediante una bomba de vacío que extrajo el agua del xilema. Una vez obtenida el agua que contenía las ramillas se analizó el enriquecimiento del isótopo ^{18}O en relación a los estándares.



Foto 6.- Olivo 'Farga' de mediana edad en la partida Arión (Ulldecona). Edad estimada 120 años.

Los resultados obtenidos se muestran en la Figura 4. Los árboles que captan agua en capas más profundas deberían tener valores del isótopo pesado del oxígeno (^{18}O) menores. El resultado esperado, por lo tanto, es que el olivo milenario tiene que tener menos cantidad del isótopo ^{18}O que los olivos jóvenes que captan el agua en capas más superficiales. Los resultados obtenidos van en la tendencia esperada pero no son significativamente diferentes entre sí (centenario vs. multicientenario) para poder afirmarlo con claridad. Los olivos, a pesar de ser mucho más jóvenes que los milenarios, no lo son tanto como para poder ver claras diferencias.

Figura 4.- Contenido del isótopo ^{18}O en el agua del xilema de los olivos centenarios y multicientenarios.



Determinación del isótopo ^{18}O (‰)	
Olivo centenario	-5.887
Olivo multicientenario	-6.039

I. Calidad comercial de los aceites de olivos monumentales

La línea comercial de venta del aceite virgen de los olivos monumentales fue la de categoría “extra” en distribución “alta gama”. Por este motivo, se decidió ser muy exigente en la calidad real de los lotes a envasar, especialmente a nivel sensorial. Evidentemente, las particularidades de cada campaña dan lugar a diferentes problemas de calidad. La Tabla 9 resume el número de muestras analizadas cada año y la cantidad de muestras de categoría “extra” obtenidas, así como su puntuación media equivalente.

Lo más destacable es que todas las almazaras que participan en el proyecto han sido capaces de elaborar algún lote de aceite virgen de olivos monumentales, de calidad “extra” suficiente para ser comercializados. En la cosecha 2011/12, el fuerte ataque de mosca del olivo (*Bactrocera oleae*) en toda la zona, hizo imposible cosechar aceitunas no afectadas y los lotes de aceite elaborados no alcanzaron la calidad mínima exigida, de manera que solamente se pudo envasar un lote de aceite y se decidió avisar a los distribuidores de este hecho.

También se han extraído conclusiones de las muestras de aceite con defectos, ya que los mismos nos han dado pistas sobre las etapas del proceso de cada almazara que daban lugar a dichos defectos. En la mayor parte de casos, el principal problema reside en la dificultad de gestionar lotes reducidos de frutos (defectos de atrojado y avinado) y de aceite, especialmente en la etapa de filtración y almacenamiento final en bodega (defecto de borras).

La puntuación media de los aceites de categoría “extra” ha sido parecida todos los años, excepto en la cosecha 2011/12 que ya se ha indicado que fue de fuerte ataque de mosca. Esta observación, junto con el análisis detallado de los perfiles implica que se trata de aceites bastante reproducibles en años diferentes, lo cual permite una adecuada estrategia de posicionamiento en el mercado.

Tabla 9. Número de muestras de aceite virgen de olivos monumentales analizadas, en las diferentes campañas de duración del proyecto.

Campaña	2009/10	2010/11	2011/12	2012/13
Nº. muestras analizadas	13	18	24	30
Nº. muestras de categoría “extra”	8	15	1	14
Puntuación media equivalente UE2568/91 de las muestras “extra”	7.2	7.3	6.6	7.1

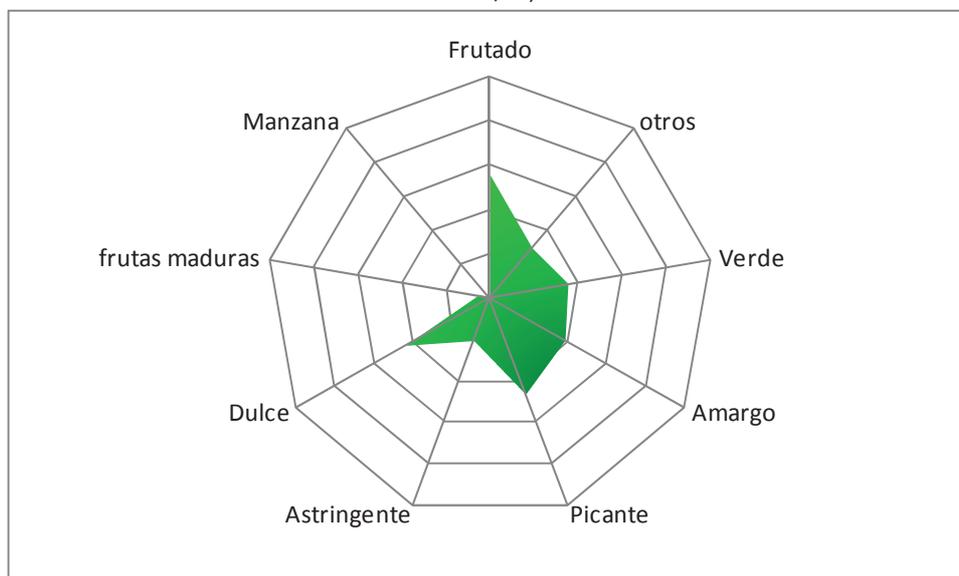
II. Perfil sensorial de los aceites de olivos monumentales

El análisis de los perfiles sensoriales de las muestras de aceite de categoría “extra” ha permitido establecer un perfil promedio, que se ha demostrado bastante estable entre las cosechas (2009-2012). El motivo de esta estabilidad se debe al hecho de que la variedad principal de los olivos monumentales es la misma (‘Farga’) y a que las fechas de elaboración siempre son bastante tempranas, ya que se

intenta fabricar este tipo de aceite a principios de campaña, antes de que el resto de aceitunas impida la gestión correcta de los pequeños lotes de frutos de olivos monumentales.

El perfil sensorial promedio (Fig. 5) de los aceites de categoría “extra” que proceden de olivos monumentales corresponde a un aceite de frutado verde de intensidad media-alta, en boca presenta un buen equilibrio entre picante y dulce, mientras que el amargo es ligero y la astringencia baja; aromas secundarios ligeros que recuerdan la hierba recién cortada, con matices de almendras y nueces verdes. La complejidad aromática oscila entre 4-5 atributos secundarios que se pueden percibir y los matices son preferentemente verdes (80-90%).

Fig. 5.- Promedio positivo del perfil sensorial de los aceites de categoría "extra" de olivos monumentales (promedio de las cosechas 2009/10 a 2012/13)



Algunas particularidades asociadas a este perfil son:

- Es un buen aceite para introducir en mercados de Navidad de “alta gama”.
- Es mejor evitar la exposición a la luz, incluso usando envases de vidrio oscuro.
- Habría que guardarlo en depósitos inertizados.
- Se deberían evitar mercados donde la rotación de muestras sea demasiado larga. En todo caso, habría que hacer un seguimiento en destino.

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Anejo 1.-

Relación de olivos monumentales muestreados para determinar morfológicamente la variedad a la cual pertenecen.

1; **3**; 4; 5; 6; 9; **11**; **14**; **15**; 16; 17; 18; 19; 22; 26; 27; 29; 30; 34; 35; 36; **40**; 41; 42; 51; 52; **54**; 59; 72; **74**; **75**; 81; **84**; **85**; 92; 93; 95; 99; 101; **105**; 106; 111; 117; **127**; **128**; **130**; 132; 133; 134; 138; **139**; 143; **144**; 145; **146**; 149; 150; 151; 152; 153; 154; 158; 162; 163; 166; **168**; 171; 172; 176; 182; 185; 188; 189; 190; 192; 193; 198; 199; **202**; **203**; 212; 213; 222; **223**; **225**; 226; 232; 235; **236**; 243; 245; 250; 251; 252; 256; 260; 264; 265; 267; **274**; **276**; **278**; **281**; 282; 283; 284; 285; 289; 290; 293; 294; 296; 300; **301**; 305; 313; 314; **316**; 317; **323**; 327; **328**; 329; 332; 334; 338; 339; 340; 341; 342; 343; **345**; **347**; 362; 364; **371**; 373; 377; 381; **383**; 385; **386**; 398; 399; 401; 403; 404; 411; 426; 432; 434; 448; 451; 453; 454; 455; 459; 460; 465; 471; 474; 481; 482; 486; 505; 507; 510; 515; 519; 520; 523; 534; 535; 536; 537; **546**; **551**; **553**; **556**; 561; 563; 565; **567**; 576; 577; 578; 584; 586; 587; 588; 592; **602**; 608; 616; 617; 619; 621; 624; 625; 626; 633; 635; 638; 639; **640**; **643**; **646**; 652; **654**; 656; 661; 662; 673; 675; 678; 679; 687; 702; 703; 706; 709; 710; 711; 712; 715; 716; 725; 726; **729**; **730**; 739; 752; 758; **760**; **762**; 764; 767; 770; 772; 773; **776**; **780**; **781**; **783**; **786**; **792**; 798; **807**; **808**; **813**; **814**; **821**; **841**; **842**; 847; 858; 859; 868; **871**; 874; 877; **880**; 881; **889**; **893**; 895; 901; 902; 904; 906; 915; **917**; **918**; 921; **928**; 945; 947; 950; 953; 956; 960; **967**; **971**; **979**; **983**; 991; 993; 994; 997; **999**; **1003**; **1006**; **1007**; **1010**; **1011**; **1015**; **1016**; 1026; 1028; 1038; 1041; **1048**; 1051; 1053; 1055; 1056; 1067; 1070; 1071; 1073; 1074; 1078; 1080; 1083; 1090; 1091; 1093; 1094; 1096; 1106; 1108; 1110; 1111; 1114; 1116; 1121; 1123; 1129; 1135; 1139; 1140; 1142; 1148; 1155; 1162; 1172; 1180; 1181; 1182; 1184; 1190; 1193; 1195; 1196; 1198; 1203; 1206; 1208; **1210**; 1214; 1215; 1222; **1225**; 1236; 1237; 1241; 1243; 1244; 1256; **1262**; 1263; 1267; 1271; **1279**; **1282**; **1284**; **1285**; **1298**; 1309; **1310**; **1322**; **1324**; 1331; **1334**; 1339; **1341**; **1345**; **1346**; **1350**; 1351; 1353; 1354; **1357**; **1359**; 1362; 1365; **1367**; **1372**; 1375; **1377**; **1379**; **1380**; **1381**; **1382**; 1392; 1398; **1402**; 1404; 1407; 1411; 1414; 1416; 1419; 1420; **1421**; 1432; **1433**; 1434; 1436; 1439; **1443**; 1445; 1447; 1448; 1450; 1453; 1454; 1455; 1459; 1462; 1468; 1469; 1470; 1472; 1473; 1477; 1479; 1486; 1490; 1493; 1494; 1495; 1497; 1498; 1499; 1505; 1506; 1510; 1513; 1519; 1520; 1525; 1528; 1529; 1534; 1535; 1536; 1538; 1539; 1540; 1541; 1542; 1546; 1547; 1549; 1552; 1554; 1557; 1558; 1559; 1567; 1576; 1578; 1580; **1585**; **1588**; 1590; **1591**; 1592; 1593; 1595; 1596; 1605; 1615; 1617; **1632**; 1637; 1642; 1649; 1653; **1654**; **1684**; 1690; 1691; **1692**; **1693**; **1694**; **1696**; **1698**; 1701; 1702; 1703; 1705; **1706**; 1708; 1711; 1712; 1713; **1714**; 1723; 1727; **1729**; 1732; 1734; 1736; 1737; 1738; 1739; 1742; 1743; 1745; 1747; 1748; 1751; 1757; 1758; 1759; 1760; 1766; 1774; 1785; 1786; 1793; **1794**; 1798; 1802; **1805**; **1807**; **1809**; 1818; 1819; 1822; 1826; 1827; 1830; 1835; 1836; 1839; 1845; 1849; 1858; 1859; 1877; 1878; 1880; 1888; 1890; 1891; 1892; 1894; 1895; 1899; 1900; **1903**; 1913; 1914; 1915; 1917; 1918; 1919; 1922; 1927; 1930; 1932; 1933; 1939; 1941; 1947; 1950; 1953; 1954; **1955**; **1969**; **1970**; **1971**; 1980; **1982**; **1985**; 1986; 1996; **2003**; **2020**; **2026**; **2031**; 2039; 2047; 2049; **2052**; 2054; 2055; 2058; 2065; 2068; 2072; **2073**; 2078; 2084; 2085; 2086; 2089; 2097; 2100; 2104; 2107; 2108; 2113; 2114; 2115; 2116; 2117; 2119; 2122; 2123; 2125; 2130; **2133**; 2138; **2139**; 2141; **2142**; 2143; 2144; 2145; **2149**; **2150**; **2151**; **2152**; **2154**; 2155; 2159; 2160; 2161; 2162; 2163; 2166; **2170**; 2171; 2180; 2187; 2188; **2192**; 2195; 2206; 2209; **2212**; 2214; 2215; 2223; **2231**; 2235; 2236; 2240; 2242; 2247; 2252; 2253; 2255; **2262**; **2263**; 2264; **2266**; **2271**; **2274**; 2278; 2279; 2281; 2284; 2288; **2289**; **2291**; 2295; 2296; **2298**; **2308**; 2312; 2313; 2316; 2319; 2320; 2321; 2327; **2330**; **2335**; 2343; 2345; 2349; 2355; 2356; **2361**; 2364; 2367; 2368; 2373; 2375; 2377; 2378; 2383; 2385; 2387; 2390; **2393**; **2396**; 2408; 2417; 2423; 2425; 2426; 2427; 2437; 2449; 2450; 2454; 2457;

2459; 2460; 2461; 2462; 2463; **2465**; 2466; 2474; 2475; 2481; 2485; **2490**; 2497; 2498; 2499;
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3836; 3839; 3841; 3847; 3849; **3850**; **3854**; 3856; 3861; 3862; **3864**; **3868**; 3870; **3874**; **3877**;
3878; **3883**; 3888; 3893; 3895; 3897; **3900**; **3901**; **3902**; **3903**; **3904**; 3909; 3913; **3915**; **3918**;
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 3962; **3963**; 3965; 3968; **3973**; 3975; **3980**; 3982; 3983; 3984; **3985**; **3986**; 3987; **3989**; **3994**;
3995; **3997**; 3999; **4006**; **4007**; 4012; **4015**; **4016**; **4019**; 4023; **4026**; **4030**; **4031**; **4037**; 4039;
 4042; **4045**; **4046**; **4050**; **4054**; **4055**; **4056**; **4057**; **4058**; **4059**; **4064**; **4066**; **4068**; **4069**; 4072;
 4073; **4079**

En negrita olivos que no se pudo recoger muestra de fruto en la cosecha 2009